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CONTENTS

PAGE

The Ascent of Mt. Bertha.....*Bradford Washburn* 149

Climbs in the High Andes of Peru.....*William F. Jenks* 157

Early Days in the Canadian Rockies.....*Walter D. Wilcox* 177

After Forty Years.....*J. Henry Scattergood* 190

Paintbrush on the Heights.....*Belmore Browne* 196

The Lunar Peaks.....*Anderson Bakewell* 200

Mountaineering Photography—Old Style.....*W. H. Jackson* 214

A Bugaboo No Longer.....*Raffi Bedayan* 219

Wind River Holiday.....*Beckett Howorth* 226

The West Face of the Grand Teton.....*Henry Coulter* 234

The North Face of Lone Eagle.....*Robert M. Ormes* 239

The First Mountain Ascent in North America
Orrin H. Bonney 242

Alpine Panoramas and Peepshows....*J. Monroe Thorington* 248

Proceedings 260

Reviews 291

Notes 304

The price of the current *Journal* is $1.00 per copy.

MT. HAYDEN, TETON RANGE, WYOMING

BY THOMAS MORAN

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THE
AMERICAN ALPINE JOURNAL

VOLUME IV 1941 NUMBER 2

The Ascent of Mount Bertha

BRADFORD WASHBURN

DURING the last forteen years six expeditions have attacked the western ramparts of Alaska's Fairweather Range. Three of these were directed against Mt. Fairweather (15,318 ft.) one of the world's highest and most beautiful coastal peaks. The last of them succeeded in reaching Fairweather's summit after a terrific siege on June 8th, 1931. The other three were a series of assaults upon Mt. Crillon (12,728 ft.) the second highest peak in the range, which was finally scaled on July 19th, 1934.

Until last summer no expedition had ever attempted to breach the barriers which guard the great peaks of the Fairweather Range from Glacier Bay. In the days when the summit of Mt. Fairweather had not yet been reached there were many speculations as to whether its eastern approaches might prove easier than those from the Pacific coast with all of their difficulties of landing in the surf and struggles through miles of tangled virgin forest before the best glaciers could be reached. But the aerial photographs taken by the United States Navy in 1929 showed such a savage succession of icefalls and jagged lesser peaks bristling between Tarr Inlet and the smooth upper reaches of the Margerie Glacier that no attempt has ever been made to climb any of the northern peaks of the Fairweather Range from this side.

In 1926 Osgood Field led a party into Glacier Bay shortly after the return to civilization of the first unsuccessful Fairweather expedition, and his description of the Brady Glacier and the eastern walls of the Crillon-La Pérouse Massif, as he saw them from the crest of the hills at the head of the Geikie Glacier, has always

remained vivid in my memory. The glimpses which we had in 1933 and 1934 down those tremendous westerly cliffs of Crillon, across the Brady Icefield and into the Glacier Bay country made all of us on these expeditions eager to explore the glacial wilderness on this side of the mountains, so utterly different in character from the forested valleys and slopes about Lituya Bay and Crillon Lake.

To attempt to climb Mt. Crillon from the E. would be the objective of a major expedition. Ten years ago this climb was considered virtually impossible. Today after a thorough reconnaissance of all its eastern approaches, both on the ground and from the air, I believe an experienced, well-equipped party could succeed by way of the great eastern ridge. This climb has never been made and it appears to me to be one of the finest mountaineering challenges in North America.

The Glacier Bay expedition of 1940, jointly sponsored and equipped by the New England Museum of Natural History and Harvard's Institute of Geographical Exploration, made no pretense at launching an intensive campaign on the eastern side of Crillon. Of its eight members only one had climbed in Alaska before and but three had had any previous mountaineering training. Its purpose was to make an exhaustive study of the eastern approaches to all the peaks of the Fairweather Range from the air and to attempt the ascent of Mt. Bertha (10,182 ft.) an extremely precipitous and beautiful rock and snow peak which dominates the western rim of the Brady Glacier about halfway between Reid Inlet and Mt. Crillon. Our party was composed of my wife, Maynard Miller of Takoma, Michl Feuersinger of Norden, Calif., Thomas Winship, Alva Morrison and Lee Wilson of Boston, Lowell Thomas, Jr., of New York, and myself.

We chartered the 74-ft. Diesel-powered "Forester" at Juneau from Mr. Lloyd H. Bayers and set out for Glacier Bay on June 29th. We landed easily on the west shore of Hugh Miller Inlet, after a very pleasant boat trip, early on the morning of June 30th and established our Base Camp on the broad, rock-strewn lowland that separates tidewater from the stagnant, retreating snout of Hugh Miller Glacier. This entire inlet has been so recently engulfed in ice that there is scarcely any evidence of life of any sort, except for the many water birds that frequent it during the summer months. We pitched camp near two little ponds a quarter

MT. BERTHA

E. face, showing camps and route. Arrows indicate caches at 4750 ft. and 8450 ft.

Photo, B. Washburn

BERTHA'S PEAK FROM THE AIR AT 12,000 FT. IN 1937

Great summit plateau clearly visible with summit cone at far end. 9500 ft. shoulder in foreground and upper part of eastern (climbing) ridge cuts to right in foreground—Johns Hopkins Glacier in extreme upper left

E. FACE OF MT. CRILLON FROM PLANE AT 8000 FT. OVER BRADY GLACIER

Crillon-Bertha pass at right and 9500 ft. snow shoulder of Bertha at extreme right

Photos, B. Washburn

mile W. of the inlet, at a point from which we could have a good view up the whole valley of Hugh Miller Glacier.

After studying two aerial photographs which I had taken of this region early in June, 1937, we discovered an excellent route up the center of the glacier to its main fork about 4 miles from tidewater. There we established a dump on a small rock island in the ice 1430 ft. above the sea. Working in daily relays we rapidly pushed thirty days of supplies to this campsite, in the meantime keeping in as close touch as possible with Juneau by means of a small portable radio set installed at the Base Camp.

On July 10th the weather dawned beautifully clear. Miller, Morrison, Thomas and Feuersinger took a light load to Camp II and proceeded all the way over the pass at the head of the N. fork of Hugh Miller Glacier on skis. Thence they descended gently for 3 miles to the foot of a conspicuous nunatak or rock island 4060 ft. high, from which there was a superb view of the entire Crillon massif and the broad expanse of the Brady Icefield. We contacted Juneau by radio and at 8 o'clock Alex Holden of Marine Airways landed his Lockhead Vega seaplane only a few hundred yards from our doorstep. We made a short flight to visit Mr. and Mrs. Joe Ibach and Tom Smith, 15 miles away at their small gold mine in lonely Reid Inlet, and told them that we expected to come out from the Brady early in August by way of Reid Glacier, one of its two northern distributaries. We then located our four advance scouts from the air and showed them to Holden, who returned an hour later to toss out to them half a ton of unbreakable food, rope, dog food, and other supplies. The plane returned to Juneau shortly after lunch after having successfully completed three dreadful weeks of backpacking for us in forty-five easy minutes. That night our four companions returned and announced that every one of our thirty-three parcels had landed safely, even including a thermos bottle full of hot coffee and a half dozen *Reader's Digest,* tossed 100 ft. to the glacier in a burlap sack.

The next day we sledged our five dogs up the moraines, rocks and ice of the lower glacier to Camp II and on July 12th the whole party evacuated the Base Camp. Two days later with continued mild, sunny weather we sledged and packed our way to Camp III at 2570 ft. in a beautiful ski basin halfway up the Hugh Miller icefall. All the terrain above Camp II was well covered with smooth,

hard corn snow which made both excellent walking and perfect sledging.

The slopes above Camp III were too steep for dog-teaming, and we had to backpack our supplies in a series of relays to the broad pass 800 ft. above. The dogs hauled up the empty sledges and thence everything was hustled across the 3 miles of snowfield to our airplane dump. Here we spent only one night and a day. The beautiful weather still held, and we had a perfect chance for a side trip to the top of the nunatak behind camp, from which the view across the Brady Glacier to the great peaks was truly magnificent. We collected several extremely interesting geologic specimens from this little rock island, as a very important contact zone between the granitic and sedimentary rocks of the range cut exactly across the ledges on its peak.

The descent to the level surface of the Brady Glacier was unexpectedly simple. We piled our entire outfit onto two enormous sledge-loads, and guided them carefully down the 2-mile grade, working for all we were worth to hold back the dogs and prevent a catastrophe on the last steep hill.

The Brady Glacier is flatter and smoother than any snowfield I have ever seen before. Our camp on its eastern border was pitched almost exactly at the height of land between Reid Inlet and Taylor Bay, 3000 ft. above the sea. July 16th was spent in a thorough reorganization of all our equipment. We took fourteen days of food ahead with us and cached roughly a week of supplies at this Brady Base. We worked the dogs very hard for the next two days, sledging three relays 5 miles across the Brady in thirty-six hours, and finally establishing Camp V in a dense fog at the very base of a long easterly spur of Bertha. From our aerial photographs it appeared as if the best climbing route to the summit of Bertha lay by way of the deep cleft between it and Crillon, but two days of reconnaissance from an advanced camp three miles farther to the W. showed us that the approach to this pass was not only exceedingly steep, but badly exposed to avalanches of ice from the hanging glaciers of Crillon on the left and falling rocks from the impressive western cliffs of Bertha on the right.

On July 20th we beat a retreat northeastward around the base of Bertha to the foot of a very steep rock and snow buttress which we had studied for some time on the aerial photographs, and which we had been holding as a last resort in case our pass route did not

prove as good as it had appeared in 1934. Camp VII was pitched at 3800 ft. and comfortably dug into the upper limit of the snow-slopes at the head of Brady Glacier—just as far as the dogs could haul our supplies.

Although we had run into dense fog and a cold drizzle for two of the last three days below Camp VII, the day after we arrived dawned clear as crystal, and we carried out a reconnaissance of the lower 3000 ft. of the buttress that rose above us toward the main eastern ridge of Bertha. The rocks and snow which had appeared unpleasantly steep from the lower glacier turned out to be rough but straightforward clambering except for a few short bad pitches.

On July 25th we established Camp VIII on a narrow snow pass at an altitude of about 7000 ft. and in full view of the summit of Bertha. The actual peak, which had been invisible from Camp VII, now rose 3000 ft. above us on the other side of a deep basin, filled with an impassable chaos of ice blocks and crevasses. Only five of our party ascended to Camp VIII for the first attempt on the summit, Thomas, Wilson and Morrison remaining at the base of the mountain to sledge the Brady Base cache several miles over toward Reid Inlet. If we had good weather and good luck with the mountain, we planned to have them ascend for a try at the peak after we had made our first attack, but wretched climbing conditions above this camp, and a dwindling supply of food resulted in only our original group of five ever actually living on the ridge.

The day after our arrival at Camp VIII was unexpectedly clear. We had not established camp until late at night, and, unfortunately, were all so tired the next morning that we did not get off until just before 11 o'clock for a reconnaissance of the pitches which rose above us. The ridge was a series of rock towers and ledges, very steep corniced snow drifts and occasional deep banks of loose snow. Five hundred feet above camp we struck a veritable flame of ice, festooned with a beautiful cornice so thin and delicate that every footstep sent masses of snow thundering into the gulfs on both sides of us. Again at 8200 ft. we encountered a 50-degree slope of black ice plastered with deep, loose powder and surmounted by a good-sized cornice which had to be excavated from underneath and overcome by a rather precarious and exposed courte-échelle. At six in the evening after six and a half hours of almost constant climbing we had attained an altitude of only 8550 ft. Leaving a supply of willow wands, lunch, socks, camera and film

under a sheltering ledge on the crest of the ridge, we retreated to camp and arrived just after pitch darkness had fallen at 10.15 that night.

The difficulty of the climbing can best be understood when one notes that we spent nearly seven hours in making only a 1350-ft. ascent above Camp VIII. The upper part of our route was turning out to be every bit as difficult as it had appeared from below. However, with steps cut and two fixed ropes waiting to speed us over the worst pitches, we went to bed that night convinced that the summit could be reached if the precipitous, narrow stretches of the ridge which lay between our high cache and the 9500-ft. snow shoulder of Bertha did not prove too difficult to negotiate in a single long day from Camp VIII.

Three days of intermittent fog, snow and drizzle kept us close to camp after our first trip up the ridge. Winship and Feuersinger went down to Camp VII one noon and returned long after dark with two days of extra food. They reported that supplies were running low on the Brady Glacier. Thirty days are none too many for an attempt on an Alaskan peak over 20 miles from tidewater, and we knew that we must hurry for all we were worth when the weather broke.

The skies cleared at 5 o'clock on the morning of July 30th and we set out at 5.45 determined to reach the top that day if it could possibly be done. The lower part of the ridge which towered above the tent and which we had first taken nearly seven hours to negotiate turned out to go rapidly with well-kicked steps, firm fixed ropes and the crisp early-morning air. We reached our cache at 8 o'clock, picked up our reserve of food, except for a small supply of dry socks and iron rations, and descended 500 ft. into the deep notch which lay between us and Bertha.

The early-morning clear-off slowly fizzled into mediocre weather. Thick clouds swirled around us as we climbed a steep snow ridge out of this first notch and then descended 200 ft. more into a broad snow pass. But our tiny book of aerial photographs indicated to us exactly where we were, and occasional patches of blue sky far above us cheered us with the hope that we would later climb out into the sunshine on the shoulder below the summit.

The steepest pitch of the whole climb rose out of the western side of this second break in the ridge. Miller and I kicked and chopped for forty minutes in waist-deep snow sticking precariously

BRADY BASE CAMP (IV) AND MT. BERTHA
Looking W. across Brady Glacier (alt. 3000 ft.)

SLEDGE-LOAD APPROACHING CAMP VII
Lower peaks of S. E. buttress of Bertha behind camp—main peak lies three miles off picture to right

Photos, B. Washburn

MILLER AND WASHBURN PLANE-TABLING ON THE NUNATAK

SLEDGING ON BRADY GLACIER

Sledges in tandem work better in slush, where a single heavy load would break through

Photos, B. Washburn

CAMP VII LOOKING S. UP THE RIDGE
Highest point visible is 8450 ft.; summit three miles to right

CROSSING A GENDARME ON RIDGE ABOVE CAMP VIII
Photos, B. Washburn

8450 FT. LOOKING E. AT 7.30 A.M.

8450 FT. LOOKING W. AT 7.45 A.M.
Cache made in rocks at left

Photos B. Washburn

Cache made in rocks at left *Photos B. Washburn*

REARRANGING ROPES BEFORE TACKLING PINNACLE 500 FT. ABOVE CAMP VIII

Slope not exaggerated. Black ice and slush

Photo, B. Washburn

A RIDGE-DRIFTED CORNICE CROSSED ABOVE THE HIGHEST PINNACLE
Photo, B. Washburn

8450 FT. LOOKING E.

SUMMIT OF MT. BERTHA FROM SNOW PLATEAU

Peak about half a mile away and 500 ft. high

Photos. B. Washburn

SUMMIT OF MT. BERTHA, LOOKING S. E.

Ridge above Feuersinger's head formed climbing route. Camp VIII at extreme left. 8450-ft. cache on central rock peak

MR. AND MRS. WASHBURN ON SUMMIT OF MT. BERTHA

Miller, Feuersinger and Winship in front

Photos, B. Washburn

to a 70-degree ice slope, till finally we had our last 100 ft. of extra rope securely fastened to a 5-ft. picket and the rest of the party joined us. The ridge now alternated with patches of rock separating stretches of beautifully corniced drifts. At noon a rift in the clouds showed a clear route ahead to the shoulder, and we took a much-needed hour's rest for lunch.

The clouds drifted lazily up and down on the wings of a faint westerly breeze, and it was not until 2 o'clock, when we finally reached the broad snow-dome of the 9500-ft. shoulder, that we were out in gloriously clear weather above a sea of silver mist. The views of the eastern walls of Crillon and La Pérouse were stupendous as we strolled confidently across the mile of gently-rolling snow plateau out of which rises the summit cone of Bertha. It was hard to believe that such a series of jagged rocks and knife-like ice ridges could possibly lead to so pleasant a wonderland above the clouds.

Miller and I lagged behind to photograph Barbara, Win and Mike as they slowly fought the deep, powdery drifts of the final ridge—a perfect story-book peak ending in a sharp, symmetrical point of pure white snow, cutting the cloudless sky. At 3.30 we reached the top together. The scenery was unforgettable. Crillon, Fairweather, La Pérouse and that wild profusion of unnamed peaks that form the backbone of the Fairweather Range—all rose before us in their full magnificence, a peaceful sea of clouds slipping gently eastward and hiding almost everything below us.

It was so warm and pleasant in the afternoon sun that we ate and chatted and photographed for over an hour on the summit. But we had a long descent ahead. Two steep uphill pulls confronted us on the way down to camp, and the ever-thickening clouds would bring darkness much sooner than it had come on our reconnaissance of several days before.

We bade farewell to our old friends Crillon and Fairweather as we rounded the shoulder, and then the cool mist caressed our sunburned faces soothingly as we dropped slowly into the clouds. The fixed ropes and carefully cleared steps were superb. At 9 o'clock we reached our cache, nibbled a bite of chocolate and drank our last powdered lemonade. Then darkness came rapidly. We put on dry socks and gloves and descended carefully and slowly over the most delicate part of our route. A flashlight and an extra set of batteries left at the cache proved a godsend in tackling the

steep face and the ice pinnacle, and we were a tired but a happy crew when we finally stumbled into camp at 1.45 A.M. exactly nineteen hours after our start the day before.

Shortage of food and nasty weather caused us to abandon all hope for another attempt on the summit with the rest of the party. Barbara, Mike and I descended to Camp VII in a cold rain on July 31st, and Maynard and Win followed the next day, climbing carefully down the ticklish rocks buried beneath a foot of fresh snow.

On August 3rd, after a long 13-mile day of sledging down the Brady Glacier, and 4 miles of rocks, gravel and bare ice, we reached Reid Inlet, and the genial hospitality of Joe Ibach, Tom Smith and their little mining camp. Freshly baked cakes and cookies, oranges, apples, delicious vegetables and the warm, pleasant breezes of Glacier Bay have left fond memories of Reid Inlet with all of us, and it was a sad day when the boat at last arrived on August 13th to take us out again to Juneau. The plane had spent the afternoon of the 12th with us photographing the glaciers and peaks in the last blank spots on the map of the Fairweather Range, and as we headed eastward again, we felt the warm satisfaction of a perfect six weeks' vacation amid some of the grandest of America's mountain scenery.

Climbs in the High Andes of Peru

WILLIAM F. JENKS

A record of three short expeditions in the Peruvian Cordillera, with an appendix listing Peruvian peaks, climbed and unclimbed, worthy of attention of American mountaineers.

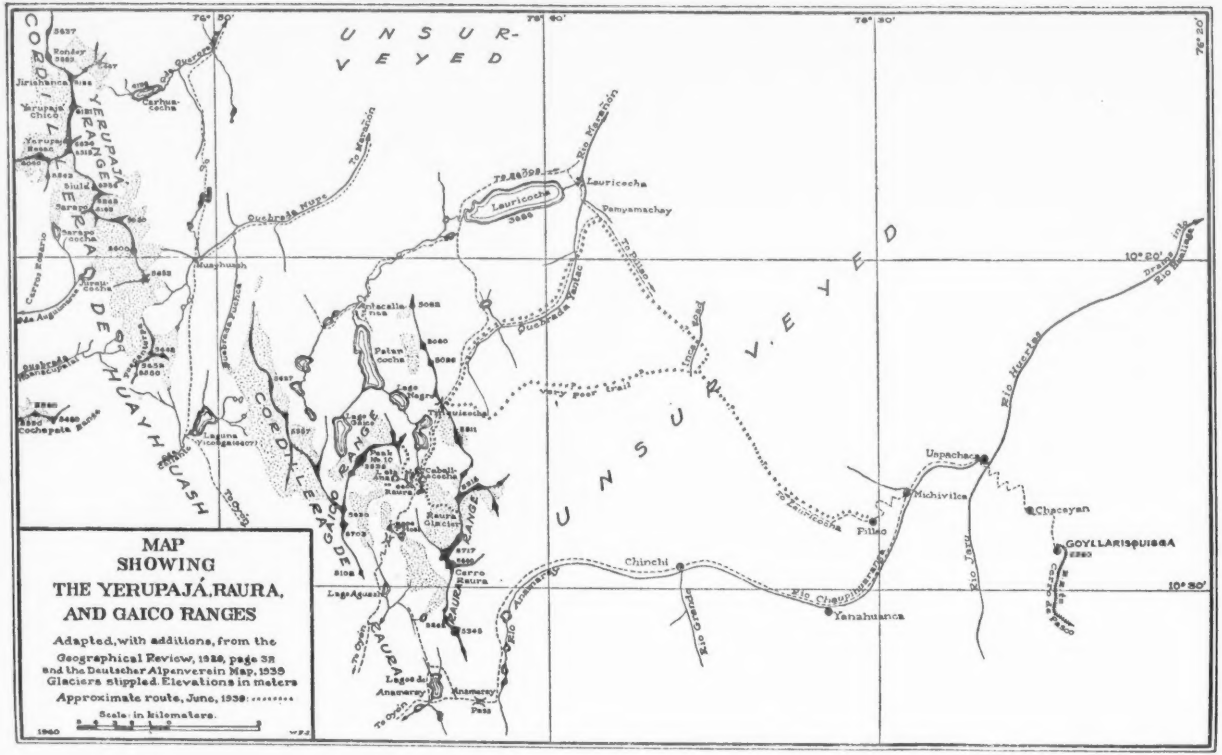
FEW American climbers are cognizant of the possibilities afforded by the Andes, especially in Peru, of first ascents of considerable difficulty. The strife in Europe will undoubtedly direct attention away from the Alps, the Caucasus and the Himalayas to ranges of equal interest much closer at hand. Certain portions of the Andes are spectacularly rugged and beautiful, but until the past decade most attention has been given to the less difficult peaks of a volcanic origin, such as Aconcagua in Chile and Chimborazo and Cotopaxi in Ecuador.

During two years residence in Cerro de Pasco, Peru, as a geologist for the Cerro de Pasco Copper Corporation, I have been able to make only three short climbing trips. One of these was into the Cordillera de Raura, in the main Andean chain; the other two were into the Huagoruncho massif, in the Cordillera Oriental.

Unfortunately the peaks of the continental divide are not easily accessible from Cerro, although they are only 40 to 80 miles distant. The most difficult peaks lie W. and N. W. from Cerro de Pasco. The drainage of the intervening region is fiendishly devised to thwart direct access to the highest mountains. Waters of the Huallaga and Marañón flow northward in deep canyonlike valleys; those of the Mantaro flow southward across the pampa of Junin.

In spite of knowledge of this unfavorable topography and contrary to the advice of natives of the region, I induced John Moses, geologist for the company, to join me in an attempt to reach the Yerupajá group in the Cordillera de Huayhuash in a one week vacation. We took a guide who claimed to know the region, but who managed to lead us not to Yerupajá but to the peaks around Raura instead. On the basis of this trip and of other similar experiences I have given up the use of guides in this country except for short distances from their native villages.

We planned our trip for the first week of June, 1939, believing that the dry season would be well enough advanced to make


MAP
SHOWING
THE YERUPAJÁ, RAURA,
AND GAICO RANGES
Adapted, with additions, from the
Geographical Review, 1939, page 32
and the Deutscher Alpenverein Map, 1938
Glaciers stippled. Elevations in meters
Approximate route, June, 1938:
Scale in kilometers.
UNSURVEYED
CORDILLERA DE HUAYHUASH
CORDILLERA DE RAURA
Yerupajá
Siula
Sarapo
Jirishanca
Rondoy
Carhuacocha
Quebrada Huayhuash
Laguna Viconga
Cerro Rosario
Cerro Angelmarca
Cochapata
Quebrada Yanacancha
Quebrada Yanac
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travelling and climbing fairly rapid. On June 1st we left Cerro on the morning train for Goyllarisquisga. The weather, cloudy at first, improved rapidly. At "Goyllar," the C. de P. coal mines, horses and pack mules were waiting for us. By eleven thirty the animals were loaded and we started down the hot, steep, and dusty trail past Chacayan to Uspachaca, at the confluence of the Rios Jaru and Chaupihuaranga. Uspachaca is 9850 ft. above sea level, or 3870 ft. below "Goyllar."

After a short rest we headed W. up the Rio Chaupihuaranga, the one branch of the Huallaga which heads in the continental divide. At about four in the afternoon we reached Michivilca where we left the main trail to Yanahuanca and Oyón and began the arduous climb up the N. side of the valley toward Pillao. Darkness had already set in when we finally urged our weary horses up the main street of this little village perched on a terrace 2500 ft. above the Chaupihuaranga. Sr. Julio Gallo, whose mines we had promised to inspect the following day, received us hospitably. Real beds with clean sheets were a pleasant surprise.

On June 2nd we were delayed in starting not only by thick clouds in which the village was swathed, but also by the customary time-taking gestures of hospitality so often encountered in Latin America. At 10 o'clock we left Pillao on fresh mules and took the upward trail to Colquipucro, about 6 miles from the town. Not until two in the afternoon did we finish examining the mines here. There was a long trail ahead and little time in which to cover it. To save time we omitted lunch and travelled as fast as the pack animals would go. About 4 o'clock we rode over a low divide and were in the Marañón drainage basin. From now until dark the way led across boggy, hilly uplands surrounding the upper reaches of the Marañón. We made camp just before nightfall, buffeted by rain and a penetrating wind.

On the third day of our trip we arose early, ready for a long trek over country strongly cut up by valleys and ridges, the foothills of the cordillera. The trail at first was hard to follow, especially as wide detours had to be made around impassable swamps said to be dry later in the season. Before noon we crossed an Inca road, strongly built of shaped stone blocks. Later we passed a number of glacier-hung peaks probably 16,500 to 17,500 ft. in elevation, few of them presenting serious difficulties to experienced climbers. As we progressed occasional views to the N. W. proved

beyond a doubt that we were heading not toward the Yerupajá group but rather to a series of snow peaks which are somewhat lower and about 15 km. to the S. This is the Cordillera de Raura. Due to the difficulties of the terrain it was obvious that we could not now change our course to reach Yerupajá, so we contented ourselves with an attempt to reach Caballococha in the Raura district. Steep, rarely used trails led us across the northeastern spur of the Raura Range, thence down to Tinguicocha,[1] along the Marañón itself. We continued upstream in a southerly direction, heading straight toward Cerro Raura, towering high and white at the head of the valley. At six in the evening of the third day we pitched camp on the shore of Caballococha at an elevation just above 15,000 ft. We had taken three full days of our week to reach our base. That allowed us one day of climbing if we assumed that the return trip to Cerro would also take three days.

At 6 A.M. of the fourth day, mountains, lake, and tent were buried in a dense fog; the temperature was 27°; not a breath of air stirred. Discouraged by the weather prospects I arose, leaving Moses and the guide Cotrina still asleep, and began to walk around Caballococha. A short time later the fog began to lift, exposing tantalizing bits of rocky slope N. W. of the lake. I followed the openings through the clouds, drawn on by the knowledge that this was our only day of climbing. First over loose talus, then over rocks of moderate difficulty I scrambled upward, with the rapidly rising clouds still above me. About 1500 ft. above camp the going increased in difficulty; a roped party of two was essential to sane climbing. But for 200 ft. farther I kept on, climbing chimneys and vertical pitches in hard banded argillite which affords good hand and foot holds. At an elevation of about 16,730 ft., about 300 ft. below the summit, a corniced ridge blocked my advance, as I had with me neither ice-axe nor crampons. A properly equipped party would find little difficulty in climbing the remaining snow pitch to the summit.

It was now 9.30 A.M.; the clouds had largely dispersed. Below, around the tent, there were signs of impatience at my prolonged and unjustified absence. Therefore I took only a short look at the splendid view unveiled during the climb. Most striking spectacle was Cerro Raura (18,760 ft.), draped on its N. flank with

[1] *Cocha* is the Quechua word for lake.

PEAK NO. 10 (5539 m.)

Seen from the Raura Glacier, Cordillera de Raura. The peak to the right, unnamed, was ascended to within 300 ft. of the summit by the rock face seen in this illustration

THE CORDILLERA DE HUAYHUASH

Seen from above Pampamachay, near Lauricocha. From right to left the peaks are Jirishanca, Yerupajá Chico, Yerupajá, Siulá, and Sarapo. An infra-red photograph

Photos, W. F. Jenks

THE S. FACE OF HUAGORUNCHO FROM NEAR TARATA

The S. W. ridge is the spur which joins the S. E. ridge (to the right) above the upper end of the large inclined rock outcrop

Photo, W. F. Jenks

a heavily crevassed glacier extending almost down to Caballococha. This climb could be made almost entirely over the glacier, which exceeds 3 km. in length.

To the S. W. a long rock summit, the highest point of which is 18,710 ft., loomed well above my perch. It is a rocky peak horizontally banded by limestone and hard shale beds, with a steep wall on the E. side. This mountain may be the most difficult in the region, although Peak No. 10[2] (18,170 ft.) would run it a close second. The easiest line of attack appears to be along the N. ridge, which may be approached by a rather large glacier clinging to its eastern side. The peak I had nearly climbed is almost due E. of Peak No. 10 and is separated from the E. ridge of the latter by a glacier-covered saddle.

Below me lay five lakes, clear blue in the morning sun. Near the upper one, Laguna Santa Ana, is a brilliant red and ochre hill said to conceal deposits of mercury and silver. Off to the E., whence we had come the preceding day, the view was largely of rock peaks rising steeply to elevations between 16,500 to 17,500 ft. Many of them would make interesting, though not difficult, climbs. A few of them have small glaciers at their summits or clinging to deep cirques well up on their flanks.

It took me about one hour to descend to camp, whereas the ascent had taken some three hours. Once at the tent only a few minutes were necessary to make peace with John and to have breakfast. At 10.45 A.M. we were again on the march, this time toward the Raura Glacier which we hoped to ascend somewhat N. E. of the summit of Cerro Raura. A short walk brought us to the toe of the glacier, which we circled to the right, climbing upward over good hard limestone. About 500 ft. above the lowest point of ice an easy route onto the glacier appeared. We roped up and I set to work cutting the few steps necessary at the start while Moses and the guide inspected a vein of orpiment recently uncovered by the receding ice. Snow on the glacier was in good condition; crevasses were deep and well-defined, yet strong snow bridges could be found when they were needed. Progress was rapid. We worked diagonally upward across the glacier in a southeasterly direction. Near the top an easterly traverse under

[2] The nomenclature of peaks in the Cordillera de Raura is that of the map accompanying "The 1927-1928 Peruvian Expedition of the American Geographical Society," by O. M. Miller, *Geogr. Rev.*, xix, 1929, 1-37.

banded ice cliffs was necessary.[3] Thence it was an easy pull to the summit of the ridge where it dipped to form a gentle saddle at an elevation of about 17,230 ft. Thanks to my impromptu climb of the morning I was, however, reaching the limit of my endurance. Cotrina, in the middle of the rope, could not learn to keep it clear of the snow, thus making my job as leader unnecessarily arduous. Our first view across the col was disappointing. A heavy storm was rapidly approaching from the S. E. In view of this threat and of my loss of energy we decided to beat a hasty retreat without attempting either of the easy snow peaks which flanked the saddle. So at 4 o'clock, after only fifteen minutes on the ridge, we began retracing our steps. Part way down the glacier the storm caught us. Heavy hail pounded us all the way back to camp, which we reached shortly before six.

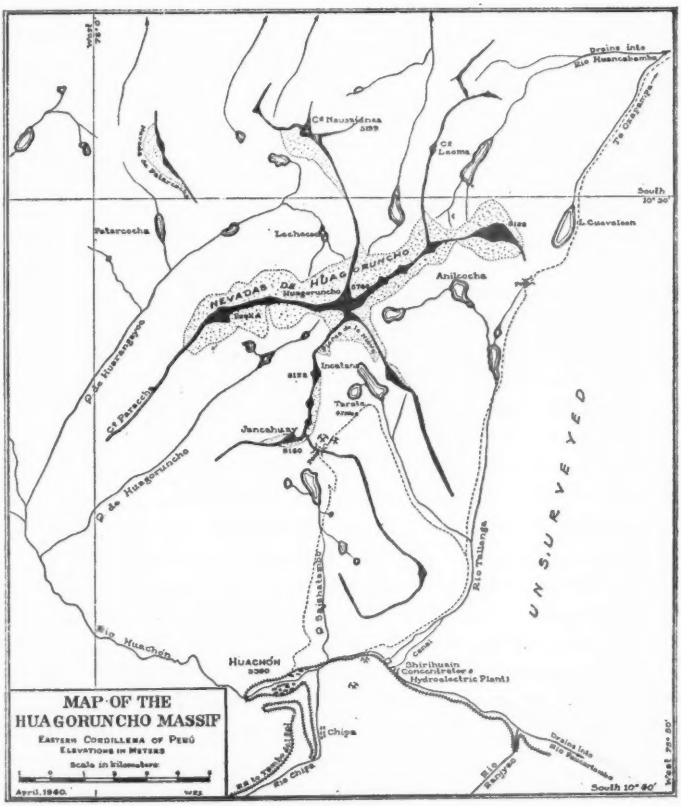
The return trip to Goyllarisquisga occupied two full days, days of cloud and rain. We returned by Pampamachay, S. of Lauricocha, a slightly longer but less difficult trail. At Pampamachay, during a lull in the bad weather, we were blessed with a splendid view of the Cordillera de Huayhuash, dominated by Nevado Yerupajá about 20 km. to the N. W. The E. face of Yerupajá rises more than 8000 ft. above the lake, Carhuacocha, in the valley at its foot. The E. walls of all the Yerupajá group are precipitous, avalanche-swept, and in spite of their steepness, snow-covered. The range has been thoroughly explored by a German party led by Dr. Hans Kinzl in 1936.[4] Two peaks over 6000 m. (Siulá and Rassac) were climbed by the party. The ascents of the unclimbed peaks will present real difficulty not only because of corniced, knife-edged ridges and avalanche-swept faces, but also because of the inaccessibility of the range as a whole.

The first night of the return trip we camped at the Inca road. The second day we followed the route by which we had entered the mountains, through Pillao, Michivilca, Uspachaca and Chacayan to Goyllarisquisga, arriving about 10 P.M., June 6th. As there was no passenger train the next morning we rode the cab of a

[3] Probably it was these cliffs that prevented Miss Annie Peck from reaching the top of the ridge in 1906. *A Search for the Apex of America,* New York, 1911, 285-293.

[4] Hans Kinzl: Die Kordillere von Huayhuash (Peru); *Zeit. des Deutschen und Österreichen Alpenverein,* Stuttgart, 1937. Also see map *Cordillera de Huayhuash (Peru)* published by the Deutscher Alpenverein late in 1939. The scale is 1: 50,000.

freight engine back to Cerro and reached home about four in the afternoon.



From the hills around Cerro de Pasco and from the pampa W. of Cerro there is visible to the N. E. a beautiful pyramidal snow peak, impressive in its isolated grandeur. Miss Annie Peck recorded the belief prevalent in the early days of the century that this peak might be the highest in South America, rising to 24,000 or 25,000 ft. above sea level. The belief is understandable, although later triangulation proves the peak to be only 5748 m. (18,860 ft.)

above sea level.[5] After my first glimpse of the mountain, known by the Quechua name of "Huagoruncho," I felt an irresistible desire to go to it, to explore its flanks and, if possible, to climb it.

Accordingly, on July 28th, 1938, a party of four including Mr. and Mrs. Paul Long, my wife and myself, set out, taking advantage of a three day holiday celebrating the anniversary of Peru's independence. The journey to Huagoruncho is made from Cerro de Pasco by taking train or car to Tambo del Sol; thence proceeding by narrow gauge railroad to Huachón. We left Cerro on the 6.50 A.M. train and one hour later were at Tambo del Sol transferring without delay to an "autocarril" (a Ford adapted to run on railroad tracks). The ninety-minute trip to Huachón, crossing the unspectacular divide between the drainage basins of the Mantaro and Perené Rivers, becomes of interest when descending the steep-sided valley of the Rio Huachón. In a series of switchbacks and sharp curves the railway drops 2000 ft. down a slope of approximately 45°. The railway grade is about 4½%.

At Huachón, a pleasant mining town at an elevation of 11,120 ft., officials of the Compañia Minera Nacional made every effort to expedite our trip. Mules were furnished us and we were offered the use of the company's cabin at Tarata, a small mine near the base of Huagoruncho. By noon we were able to begin the ride to Tarata, an easy journey of three hours. Soon after starting from Huachón heavy clouds, which had been shrouding our hopes of a successful trip, began to lift. For the following two days the weather was perfect.

Huagoruncho is hidden from view until one is almost at its foot due to the fact that the trail circles around the S. side of a large moraine. The peak bursts upon one suddenly, overwhelmingly magnificent, towering 5000 ft. above yet only 4 km. away. The first view is of the sheer S. face, with steep corniced ridges sweeping the eye upward at either hand to an amazing pinnacle of ice crowning the summit.

Exhilarated and deeply impressed by the sight of such a powerful adversary, we pushed on to Tarata. Here we found a concrete cabin admirably, even luxuriously, adapted to use as a base camp. The cabin has a sleeping room with two beds, a dining room warmed by a small stove, and another room which served as an office when

[5] Miller, *op. cit.*, 35.

the small mine nearby was active, but which now is an excellent repository for equipment. With a little rearrangement the cabin could accommodate eight people.

On the morning of the second day we started for the mountain well after daybreak, having spent some time planning routes. The terrain was entirely unfamiliar to all of us. We decided to approach the peak by the S. W. ridge. The route lay first along rocky buttresses beneath glaciers hanging on the E. slope of the Jancahuay-Incatana ridge. Going was easy, over glacier-polished granite slabs, and no rope was necessary. We climbed slowly, not wishing to attain an elevation higher than the saddle between Incatana and Huagoruncho. Approaching this col we were able to choose between two routes, one over rock, the other over a small triangular glacier on the S. side of the col. Due to inexperience with snow climbing of the majority of the party we chose the glacier route for the sake of practice. A few steps were necessary at the edge of the ice; otherwise the going was without difficulty. The snow, even at midday, was of good consistency except where it was banked on steeper slopes. Crevasses were deep and wide, yet easily crossed by strong snow bridges similar to those on the Raura Glacier.

We reached the summit of the saddle about noon and estimated its elevation at about 15,800 ft., using a clinometer and an estimated distance from Tarata, the elevation of which is known to be about 14,300 ft. After lunch my wife and I pushed on up the S. W. ridge to get a better view of the S. face. This is a tremendous wall of ice and snow-coated rock which drops from the summit (18,860 ft.) to a little lake at the head of the Quebrada de Huagoruncho, at an estimated elevation of 13,500 ft. An approximate clinometer reading on this face is between 65° and 70°. It is overhung by a large ice cornice from which avalanches occasionally break, sweeping the whole face. At a vantage point some 500 ft. above the col of the triangular glacier we halted.

From here the S. face confronted us directly, awesome in its verticality. Ahead of us our ridge abruptly steepened, rising rapidly through a series of fluted cornices and intricate rock pitches to its junction with the S. E. ridge. No feasible route up the S. W. ridge is evident. The S. E. ridge, on the other hand, looks possible, but was totally unattainable from our position. The W. ridge presents great difficulties in the form of extremely unstable looking cornices. The lower end of the W. ridge is a sharp saddle

at an elevation of about 16,500 ft. From there it rises abruptly again to the ragged crest of another peak, unnamed, but called for convenience Peak A on the accompanying map. This peak will probably be moderately difficult to climb. The S. face is covered with a series of steep glaciers and icefalls. The N. side is likewise glacier-hung, but not so steeply and the best route apparently lies up this N. glacier to the N. W. arête and along the arête to the summit.

At about 2.30 in the afternoon we acknowledged the inadvisability of proceeding farther and began retracing our steps down the ridge to the col and thence over the triangular glacier to its foot. From here we dropped down over easy ledges and couloirs to a lake nestled between moraines below Tarata.

Once back at the cabin we gazed upon the mountain, first in the soft light of late afternoon, then in the glorious rose glow of a tropical sunset. Could it be climbed?

The following day it was necessary to return to Cerro. We sent our packs back to Huachón by mule, then proceeded afoot to a pass just below the S. side of Jancahuay. There we bade good-bye to Huagoruncho and dropped down a steep trail into the Quebrada de Sajshatambo, which leads due south to Huachón. This trail is impassable to mules or horses but is easy afoot.

We were again received in Huachón in most friendly fashion, this time with drinks and a large dinner. After a short visit to the concentrating plant we again boarded the autocarril and reached Tambo del Sol in time to catch the evening train to Cerro de Pasco.

Our second trip to Huagoruncho was somewhat in the nature of an experiment. We went during the three-day Carnival holiday, February 4th to 6th, 1940, primarily to observe snow and weather conditions in the sierras at the height of the rainy season. Before starting we had little reason to be optimistic about the weather. Interrupted by only a few clear days, rain, hail, and snow had prevailed at Cerro for several months.

In spite of such an inauspicious prelude, a party of four (Scott Gordon, Mike Reinhardt, my wife and myself) left Cerro after work on Saturday, February 3rd. At Tambo del Sol we were met by the autocarril as before, and were again hospitably received at Huachón, some time after dark.

The next morning we left Huachón in a slow, steady rain, following the Tallenga trail to Tarata. This time the brilliant, spec-

tacular first view of the mountain was denied us. A gentle rain and low clouds fogged even the nearest peaks. We arrived at Tarata about noon, waited half an hour for the pack animals and after a light lunch started for the S. glacier, the Flores de la Nieve. The rain had somewhat diminished in intensity and alternated with flurries of snow. We passed between the two lakes below Tarata and then circled the larger, lower lake, with the Flores de la Nieve perched well above us. Heavy clouds hung just about at the level of the lowest ice. From the edge of the lake we climbed diagonally upward over talus and soon entered a couloir which afforded an easy approach to the E. end of the glacier. Above the couloir we climbed over polished slabs to the edge of the ice and the edge of the clouds.

A route onto the glacier which necessitated no step-cutting was found at once. We decided to go across the ice a short distance to get an idea of conditions we should meet the following day. We found the snow rather difficult, heavy going. On level stretches some three feet of the current season's snow had accumulated, the upper foot of which was loose and heavy. In places we would sink well above the knees and flounder helplessly. Danger from hidden crevasses was considerable.

At 4.30 P.M., in the midst of a heavy snowstorm, having been able to advance only about half a kilometer over the unfamiliar glacier, we turned around and headed for Tarata.

The next morning the weather was unchanged. Not once had we seen the top or even the flanks of Huagoruncho. However, we left Tarata soon after seven, retracing our route of the previous day up onto the glacier. About eight inches of new snow had fallen during the night. As before, clouds were low and progress on the ice was consequently slow. To guide our return we stuck wands of brush, gathered near Huachón, into the snow at short intervals. Shortly before noon further climbing became distinctly dangerous due to inability to see crevasses even at close range. We halted for lunch and waited, hoping for a break in the clouds which would permit us to pick a route to the summit of the long S. E. ridge. After some time the clouds did lift a bit. We crossed the upper edge of the glacier close to a bergschrund below a vertical rock wall and approached the ridge at a triangle of snow to the N. of this buttress. The final pitch below the ridge was steep, approximately 55°, and was topped by a soft snow cornice through

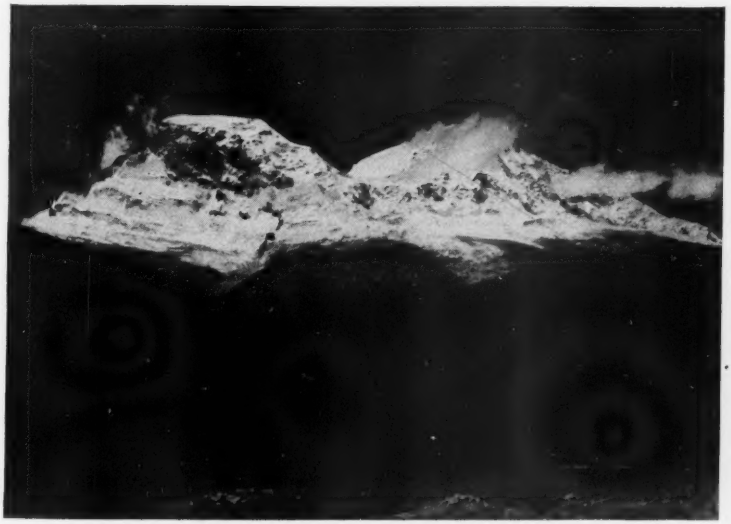
which a passage had to be broken. In these upper pitches going was very slow due to the extremely soft snow, into which we sunk up to our waists at every step. From our difficulties a technique new to us was evolved. It was found that reasonable progress could be made by crawling if care were taken to keep the whole shanks from knee to toe and at least one arm from hand to elbow constantly parallel to the surface. Purchase to prevent sliding was obtained by sinking the ice-axe to the hilt at each forward movement. To avert the all too obvious danger of starting an avalanche, we climbed well separated and directly up the slope.

At about 1.30 we succeeded in forcing our way through the final cornice and were on the long lower reach of the S. E. ridge. We were favored with occasional gaps in the clouds, through which we glimpsed the serrate E. ridge of Huagoruncho up to its junction with the central mass of the mountain. Far below us to the E. we momentarily saw a somber lake encircled by wet, black cliffs above which hung white fangs of ice. At intervals avalanches broke loose from the lower edges of these glaciers and crashed over the cliffs to the talus slopes by the lake. For one brief moment we caught sight of the S. E. ridge of Huagoruncho, extending from our position almost straight toward the summit. It is steep, exposed, and badly corniced and yet affords the most feasible route to the summit. After this momentary but revealing view a bitter wind laden with hard fine snow forced us from our exposed position. To walk down the steep snow slopes proved to be almost as hard as climbing up them. The only solution was to slide supine, using the ice-axe for control. Halfway down the glacier the clouds parted again, and we had our first and last near view of the whole of Huagoruncho. We scanned the ridges with powerful glasses only to find one obstacle after another blocking each suggested route. It is a peak of crystal guarded by sheer facets of ice and rock, close yet immeasurably distant, to be viewed with awe and humility not only by the humble folk of the valley but by us as well who have the temerity to believe it can be climbed.

Again the majestic peak disappeared in the clouds. We continued the descent of the glacier and the slabs below it, thoroughly wet in the steady rain that had set in. The dry cabin, a strong bracer of whiskey, and hot coffee were needless to say most welcome.

PEAK A, W. OF HUAGORUNCHO
From the col above the triangular glacier

Photo, W. F. Jenks



NEVADO HUASCARAN
The S. summit of which is the highest mountain in Peru; looking E. from the valley near Yungay

Photo, O. C. Schmedeman

THE S. FACE OF HUAGORUNCHO
From the col above the triangular glacier

Photo, W. F. Jenks

The third day, as on our previous trip, we walked the valley of the Sajshatambo to Huachón and returned to Cerro by auto-carril and car. Still swathed in clouds, Huagoruncho, unscathed, defied the world.

Appendix

In the following pages available data concerning the major mountain groups of Peru are assembled. The information has been compiled by personal observation, by reference to publications and by discussions with other climbers; it is necessarily incomplete.

The difficulty of any ascent over 17,000 ft. in Peru will naturally vary greatly according to the season. The more difficult climbs obviously can be attempted only under ideal weather conditions. These are most likely to be encountered during the first half of August, at the height of the dry season. Even then, however, good weather cannot be counted on. Throughout the high cordilleras and pampas of Peru an afternoon storm is the usual occurrence even during the dry season. In the high sierras these storms bring snow, fine hail, and a piercing wind.

Climbs of any difficulty are absolutely impossible during the rainy season, which extends from the end of September to the middle of May. This is due to the low cloud ceiling (about 15,000 or 15,500 ft.) and to the almost continual snowfall in the higher regions, with consequent serious danger of avalanches. Moreover many areas are inaccessible due to washed-out trails and impassable swamps.

In this appendix the mountains of Peru are arranged geographically without regard for difficulty. They are discussed by groups or ranges, within any one of which climbs may vary from easy to impossible.

I. Cordillera Blanca

This is a long group of snow and ice covered peaks, many of them over 20,000 ft. high. The range extends in a southeasterly direction from latitude 8½° to latitude 10° S., a length of about 170 km. It runs parallel to and E. of the great valley of the Rio Santa. The top of Huascarán, 22,206 ft., is exactly 8½ miles from Mancos, the elevation of which is about 8500 ft., giving a difference in elevation of 13,700 ft.

Maps of the Cordillera Blanca.—The best map is that accompanying "Die Weisse Kordillere," by Philip Borchers. The scale

is 1 : 100,000. It covers the northern two-thirds of the range. Other maps, good for the habited valleys but lacking detail in the high mountain areas are the Huarás and Recuay sheets of the Servicio Geográfico del Ejército del Perú; 1934. Their scale is 1 : 200,000.

Climbs.—For details of all 1932 climbs the reader is referred to the book by Borchers.[6] A summary of climbs made in 1932, 1936, and 1939 was recently made by Kinzl.[7]

The first climb in the region was by Miss Annie Peck, who claimed to have reached the N. summit of Huascarán in 1908.[8] The later German expeditions have questioned the veracity of this claim, but for want of conclusive proof to the contrary Miss Peck's word must be taken at face value.

The following peaks were climbed in 1932 by the German party led by Philip Borchers and including climbers H. Hoerlin, H. Hein, and E. Schneider in addition to three non-climbing members: Huascarán, S. summit (6768 m.), the highest mountain in Peru. Chopicalqui (6400 m.). Huando (6395 m.). Artesonraju (6025 m.). Nevado de Copa (6203 m.). This was used as a base for physical observations. All these peaks lie in the N. and central portion of the range.

In 1936 the following peaks at the N. of the range were climbed by the Germans E. Schneider and A. Awerzger: Quitoraju (6100 m.) Pucajirca (6050 m.). Nevado Champará (5748 m.).

In 1939 another German party, including H. Schweizer, W. Brecht, K. Schmidt, and S. Rohrer made first ascents of Contrahierbas (6036 m.). Palcaraju (6150 m.). Ranrapalca (6165 m.). Ticliaraju (6050 m.). Pamparaju (6300 m.). Hualcán (6150 m.). Huascarán, N. summit (6655 m.). Second ascent.

Although so many peaks (14) more than 6000 m. in height have already been climbed, many more remain untouched, as can be seen by reference to the 1935 map. It is the opinion of Dr. Kinzl and Dr. Brecht that at least one peak in the range is unclimbable.

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[6] Borchers, P., *Die Weisse Kordillere,* Berlin, 1935. Map in separate folder.

[7] Kinzl, H., "Las tres expeditiónes del 'Deutcher Alpenverein' a las Cordilleras Blancas," *Boletin del Museo de Historia Natural 'Javier Prado,'* iv, No. 12, 3-24, 1940.

[8] Peck, A. N., *A Search for the Apex of America.* New York, 1911.

The range is undoubtedly a magnificent area for a prolonged expedition during which numerous difficult first ascents could be made.

Means of Access.—The peaks of the Cordillera Blanca are easily reached from the valley of the Santa River. The towns of Yungay and Huarás apparently make the best points of departure. The easiest way to the Santa Valley is by railway from Chimbote on the coast; a good highway joins Chimbote to Lima. A rather poor automobile road leads from the coast to Huarás, crossing the high pass over the Cordillera Negra.

II. Cordillera de Huayhuash

This spectacular, compact group of mountains lies S. E. of and essentially parallel to the Cordillera Blanca. The high peaks are limited to a zone only about 25 km. long, the center of which is at about 10¼° S. latitude.

Map of the Cordillera de Huayhuash.—An excellent map of this range has been compiled by Dr. Hans Kinzl and published by the Deutscher Alpenverein. The scale is 1 : 50,000. Details of valley, peak, glacier, and moraine is remarkably good. The date of the map is 1939.

Climbs.[9]—Nevado Yerupajá, the highest peak in the range, has never been climbed, though it was attempted twice in 1936 by the Germans Schneider and Awerzger. The mountain is the second highest in Peru, with an elevation of 6634 m. Its breath-taking, sheer, ice-covered E. face rises 8100 ft. above Carhuacocha. In 1936 Schneider and Awerzger camped in the saddle between Siulá and Yerupajá and attempted the steep and badly corniced S. ridge on July 28th, but were unable to advance far. Later in the season an attempt was made on the W. ridge. On August 8th, from a camp on the glacier W. of Yerupajá at an elevation close to 5600 m., the W. ridge was climbed nearly up to the junction with the S. ridge, at an elevation of about 6000 m. As Awerzger was not well they had to retreat. This ridge appeared to offer the only possible route to the summit.

The peak next S. of Yerupajá, named Nevado Siulá, was climbed by Awerzger and Schneider on the day of their first attempt on Yerupajá. The elevation of Siulá is 6356 m. The mountain was climbed by its N. ridge, with occasional spectacular traverses

[9] Kinzl, H., "Die Kordillere von Huayhuash (Peru)," *Zeit. des Deutschen und Österreichen Alpenverein,* Stuttgart, 1937, 1-20.

on both the E. and W. faces. The summit was approached by a steep climb up ice on the E. face. The climbers were unable to approach to within more than a few meters of the summit itself because it consisted of a thin cornice overhanging the tremendous E. wall of the mountain. To stand on top would have been suicide. This N. ridge appears to be the only practicable route to the top of Siulá.

Nevado Rassac (6040 m.) was climbed by Schneider and his porter Faustino after the second unsuccessful attempt on Yerupajá. The ascent was by the E. ridge and was comparatively easy.

Of the other peaks of the Cordillera de Huayhuash, Sarapo (6143 m.) to the S., and Nevado Rondoy (5883 m.) will present few difficulties. Yerupajá Chico (6121 m.), next N. of Yerupajá, will probably be climbed by its S. ridge. Apparently the chief difficulty will be in reaching the col between Yerupajá and Yerupajá Chico.

Jirishanca (6126 m.), next N. of Yerupajá Chico, is a spectacular, pointed mountain up which there is no obvious route. Perhaps it is unclimbable.

Means of Access.—The Cordillera de Huayhuash is one of the most inaccessible mountain groups of Peru. It may be reached from Ticapampa, a small town on the Lima-Huarás road near the head of the Santa Valley. From here a trail leads over the Toca Pass through Chuquián to Pacllón, whence the W. side of the range is accessible. Three or four days are necessary for the trip. Another route starts at Goyllarisquisga, end of a branch of the Cerro de Pasco Railway. A trail from "Goyllar" leads to Lauricocha, up the Marañón to Antacallanca and then northward over a pass to the Rio Nupe. From Huayhuash on the Nupe a good trail goes northward to Carhuacocha, at the foot of the E. face of the range. This route will take from three to five days, depending upon conditions.

III. Cordillera de Raura

This range lies a few miles S. E. of the Cordillera de Huayhuash and is separated from the latter by a pronounced valley and low pass. It is less spectacular and less of a unit than the Cordillera de Huayhuash. Actually the Cordillera de Raura may be divided into two parts, that W. of the Oyón-Lauricocha trail being known as the Gaico Range, and that E. of the trail as the Raura

Range. Unlike the peaks of the Cordillera Blanca and the Cordillera de Huayhuash, the rock is here not granite but, rather, well stratified limestone and hard shales. Dikes are, however, fairly abundant.

Map.—The only map of the region is "A Topographical Survey of the sources of the Marañón and Mantaro Rivers," by O. M. Miller and K. M. Hodgson, *Geographical Review,* 1929. The scale is 1 : 200,000. This is a fairly good map of the central parts of the range, but entirely lacks information in the peripheral areas.

Climbs.—Cerro Raura, a twin peak whose highest point is 5717 m., is the highest peak of the Cordillera de Raura. It is a round-topped mountain with a long glacier on its N. slope. No attempt has been made to climb the summit, but the N. E. ridge has been stormed twice. In 1906 Miss Annie Peck made a partial ascent of the N. glacier. In July, 1939, J. H. Moses and W. F. Jenks ascended the glacier to the N. E. ridge but proceeded no farther. The climb to the summit should not be difficult, following the N. glacier and N. E. ridge.

A peak the elevation of which is 5703 m. and which lies some 3 km. S. W. of Laguna Santa Ana is probably more difficult than Cerro Raura. A logical route appears to be up the glacier W. of Laguna Santa Ana to the N. ridge and thence up the ridge to the summit. This climb has never been attempted.

Peak No. 10 (5539 m.) is a prominent rock and snow peak centrally located in the Gaico Range. It is unclimbed. The best route appears to be up the E. ridge. The lower peak, E. of Peak No. 10 and separated from the E. ridge of the latter by a glacier-covered saddle, was climbed by its rocky S. face to within 300 ft. of the summit in June, 1939, by W. F. Jenks.

Means of Access.—The Cordillera de Raura is most easily reached by a two-day muleback ride from Goyllarisquisga, at the end of a spur of the Cerro de Pasco Railway. One of the best trails, which goes through Yanahuanca to Anamaray Pass, leads one close to the S. side of Cerro Raura.

IV. Tunshu Range

The Tunshu Range is a fairly compact group of mountains with its center at about 11° 55′ S. latitude and 76° W. longitude, along the continental divide. Though none of its peaks rises higher

than 19,000 ft., the range is an interesting climbing center, one major peak of which has not been climbed.

Map.—The only map of the region of any degree of accuracy is an unpublished hacienda map in the files of the Cerro de Pasco Copper Corporation.

Climbs.—Tunshu, the second highest mountain of the range, is 5707 m. in elevation. It is the easternmost peak and has several subsidiary summits. The first serious attempt on it was by T. A. Dodge of Los Angeles, Calif., and his porter, D. Dionisio, in September, 1938. They followed the S. E. ridge to a point about 500 ft. below the summit, and were then stopped by a steep, narrow, corniced arête. In August, 1939, a party comprising Hans Schweizer and Siegfried Rohrer, Germans, and Jacob Diener, Swiss, attempted the E. ridge but were stopped by poor snow conditions. The next day, August 29th, they were about to attempt the S. E. ridge when an avalanche, starting on a slope later measured as 34°, swept over them. All three were instantly killed. This tragedy emphasizes the subtle dangers of high Andean climbing near the Equator.

The best route to the summit of Tunshu appears to be this S. E. ridge. The climb will be interesting and difficult, but not comparable in difficulty to Huagoruncho or the high peaks of the Cordillera de Huayhuash.

Two other peaks, Pachancoto and Tullujuto are worthy of particular mention. Pachancoto (5394 m.) is the mountain next W. of Tunshu. It is covered on its S. side by an exceptionally large glacier. The ascent was attempted for the first time in September, 1938, by T. A. Dodge and Scott Gordon, a Canadian. They tried unsuccessfully to follow the E. ridge. A few days later Dodge and his porter, Dionisio, climbed Pachancoto by its N. face.

Tullujuto is a twin peak S. W. of Pachancoto. The N. summit (5699 m.) was climbed by Dodge and Dionisio in 1936. It is an easy climb. The higher, much more difficult S. summit (5752 m.) was first climbed in September, 1938, by Dodge. The upper part was a very exposed ridge climb which Dodge made alone, leaving his porter 500 ft. below the summit.

Two other peaks in the Tunshu Group, Tatajaico (5591 m.) and Jija (5513 m.) are over 18,000 ft. in elevation, but offer no

great difficulties. To the best of my knowledge neither has been climbed.

Means of Access.—From Yauli, on the Ferrocarril Central del Perú an auto road climbs to San Cristobal, whence it is only a five- or six-hour muleback ride to the Tunshu Range. An alternate route is from Pachacayo (also on the Ferrocarril Central) to Cochas, by muleback. Cochas is a hacienda S. E. of the range. This is a longer but more convenient route.

V. Huagoruncho Massif

The Nevados de Huagoruncho are a compact group of granite peaks, largely covered with ice and snow, which dominate the eastern cordillera of Peru. The center of the small massif is at 10° 32′ S. latitude and 75° 55′ W. longitude. The range is of interest primarily because of its prominent high peak, Huagoruncho, which towers so high over the surrounding mountains that it is clearly visible from high points in the Tunshu Range, 170 km. away.

Map.—There has been no map of this region published prior to the one appearing with this article. The accompanying map is compiled chiefly from a topographic map in the files of the Cerro de Pasco Copper Corporation, but with many additions and corrections from my own observations.

Climbs.—Huagoruncho is a steep pyramidal peak with an elevation of 5748 m. It is higher than any other mountain of the eastern cordillera except perhaps one or two summits in the Lasontai Group, far to the S.. The peak has never been climbed, and, if it ever is successfully stormed, will prove to be exceedingly difficult. A reconnaissance trip a short way up the S. W. ridge was made in July, 1938, by P. W. Long, W. F. Jenks, and their wives. Another such trip was made in February, 1940, at the height of the wet season, by E. Reinhardt, Scott Gordon, W. F. Jenks, and Mrs. Jenks, this time to the lower part of the S. E. ridge. All ridges are badly corniced and steep; the W. ridge would be especially dangerous for this reason. The chief difficulty with the S. W., S. E., and E. ridges lies in steep, extremely exposed ice cliffs near the summit. The most likely route, however, appears to be the S. E. ridge. Due to constant avalanche danger all face climbs are out of the question.

Peak A (see map) is a ragged, heavily glaciated mountain to the W. of Huagoruncho and joined to the latter by a col and the steep W. ridge. The elevation is estimated at about 5300 m. The peak has never been climbed and will be moderately difficult. Although the S. W. ridge looks possible, a better approach for a climb to the summit appears to be by the N. W. ridge. I have, however, never observed the latter route close at hand.

Incatana (5122 m.) and Jancahuay (5160 m.) are the high points on a ridge extending S. from the col at the foot of the S. W. ridge of Huagoruncho to a point just W. of Tarata. These summits were triangulated in 1927 by Miller, working from Cerro de Pasco.[10] Jancahuay has been climbed by a native caretaker at the Tarata mine; Incatana is, to the best of my knowledge, unclimbed. Both should be fairly easy, although the final rock pitch on Incatana may present some difficulty.

Means of Access.—From Tambo del Sol, a station on the Cerro de Pasco Railway, a narrow gauge railway leads to Huachón. Here mules are obtained for the three-hour ride to Tarata, in the heart of the massif.

VI. Lasontai Group

This is a small group of snow and ice covered peaks only an hour's drive N. E. of Huancayo, following the road up the Rio Acopalca. Although the range is easily visible from the road, little is known about it. According to H. Kinzl, who spent some time in the range in 1939, the highest peaks rise to elevations between 5700 and 5800 m. Judging from photographs, the Lasontai Group deserves much more attention from climbers. There is no map of the range.

VII. Nevado Coropuno

This is a mountain totally unlike all the rest which have been mentioned, as it is a high, massive peak of volcanic origin. All information I have been able to collect shows that it has not been climbed. Its elevation is 6614 m., one of the high points in Peru. It is located at 15° 31′ S. latitude and 72° 42′ W. longitude. It is certainly worthy of the attention of climbers.

[10] Miller, O. M., *op. cit.*, 34.

Early Days in the Canadian Rockies

WALTER D. WILCOX

IT is strange how some impressions retain their vivid and beautiful character throughout one's life, while others that might seem of equal interest pass from memory all too soon. I can never forget my first view of the Selkirks and Canadian Rockies. It was in 1891 that, returning from a visit to Alaska, our train was working its way up the W. slope of the Selkirks. The broad slopes of balsam and fir, snow-white torrents far below, and silvery glaciers touching the blue sky, aroused my utmost admiration.

At Glacier House I met for the first time that little group of pioneers that made this their summer home. They were the Vauxes, the Schaffers, the Allens and others who were accustomed to gather every evening round a blazing fire and read selections from Green's *Among the Selkirk Glaciers* just as our forefathers were wont to read a daily chapter from the Bible. The place was beautifully laid out with fountains and flower gardens, while in the distance one could see the white mass of the Great Glacier and the towering pyramid of Mt. Sir Donald. But, owing to the very few trails and the great density of the forest growth there were only two classes of visitors to Glacier. One was that of the hardy mountain climbers, not to be deterred by any obstacle; and the other, those of more quiet tastes who were content to take photographs, gather wild flowers, or write books on botany.

This feeling of confinement and lack of spatial opportunity soon made me transfer my affections to the Main Range, E. of the Columbia, where there were more open forests and even these made easier by Indian trails. Banff was a rather primitive place when I first visited it in 1891. The main street was lined with log houses and small stores, and made more colorful by Indians in native costume, Mounted Police, and visitors from the old country, Australia and India. The hotel was a large frame structure of four or five stories. The central part was open from the office on the ground floor through to the roof and, except for the height, the whole place had somewhat the same atmosphere of grandeur and hospitality that one finds in Sir Walter Scott's descriptions of the ancient Norman and Saxon castles. Mr. Mathews was manager

for many years and was most popular, as he was a genial host possessed of a vast fund of good stories.

Lake Louise at this time was still more primitive. One had to be called in the cold dawn, eat a breakfast of toast and coffee and take the morning train to Laggan, as the L. L. station was called at that time. The road up to the lake ran through a burnt forest and was the worst I have ever seen outside of a lumber camp. The train was usually, but not always, met by a buckboard with two horses, and the fastest runners among the visitors got a ride. The rest had to walk. There was a log hut on the lake shore but no accommodations for over night in 1891. One day the hut burned down when Mr. Astley, who was in charge, happened to be absent. Sam Allen and I spent the summer of 1893 in tents on the lake shore while a new chalet was in progress of construction. There was a small dock and one or two row boats on the lake shore, but the area near it was a dismal stump-filled swamp, a breeding place for myriads of mosquitoes as well, in strong contrast to the well kept lawns and flower beds of the present day.

Perhaps it is only fair to say that Astley was my first outfitter, but that depends on what might properly be called an outfit. When we think of the present-day camp comforts, with pneumatic mattresses, warm sleeping bags, excellent food and service, the miseries of those early days seem like a glimpse of the dark ages. For our first trip into Paradise Valley, Astley gave us two sorry looking cayuses, one of which had a saddle, the other none, one blanket for each two men, and the larder in about the same proportion. The two Indian boys who were our guides deserted the first day. Not to be outdone by such little things we led our horses through a pathless forest, blazing our way as we went and then endured five nights on the cold rocks of upper Paradise Valley before we turned back. But, our trail had disappeared—we had blazed the trees on the wrong side!

When the new chalet at the lake was completed in 1894, there was available to visitors for the first time a simple but decent manner of living. Interesting travellers from all parts of the world began to arrive. Among the first, and in fact long before this time, was Col. O'Hara, who came every year to that beautiful lake which has since been named for him. Somewhat of a recluse, he preferred to spend his time in wild spots far from the madding crowd. Then there was Prof. Fay with his unbounded energy

IN THE PALLISER COUNTRY
Right to left: Ross Peecock, Tom Lusk, Jim Wood, Walter Wilcox

FRED STEPHENS, ARTHUR ARNOLD AND TOM LUSK
Photos, W. D. Wilcox

COL. ROBT. O'HARA OF WEST LODGE, GALWAY, IRELAND
For whom Lake O'Hara was named

JIM BREWSTER, W. D. WILCOX AND TOM WILSON
Photos, W. D. Wilcox

and enthusiasm for mountaineering. The Vauxes came to Lake Louise in the earliest days, but I think they preferred Field. Later came Habel with all kinds and sizes of aneroid barometers, determined to measure the altitude of Lake Louise to the last inch.

In the '90s, and later, Field was one of the popular resorts. The hotel was virtually a railroad station but there were few trains to disturb one's rest and quiet. Under the care of the Mollison sisters the dining room was a fairyland of well set tables, decorated with wild flowers, and made even more tempting by a delicious menu. The Natural Bridge and Emerald Lake were the only interesting places to be visited.

To the geologist, however, the fossil beds high on the slopes of Mt. Stephen were something that should not be missed. Here, spread over a considerable area, every stone is full of trilobites and other fossils. I realized that these deposits should be of paramount interest to my friend, Dr. Walcott, at that time secretary of the Smithsonian Institution. I made several vists to the beds and with the aid of four or five section-hands got down enough stone to fill a barrel which was shipped to Washington. Dr. Walcott was most enthusiastic when he examined these specimens. While all the species were known to him the shale was of such fine texture that details were sharp and clear. A few years later this scientist who was the world authority on Lower Silurian life came to the mountains, discovered newer and better beds, and with his hammer and chisel brought to light connecting links between the crustaceans and fishes, hitherto unknown to science.

Douglas Dick was an interesting figure of those days. His favorite resort was Field, for the Mollisons were the only women in the world of whom he had no fear. Neither tiger nor grizzly could strike more terror into the heart of the average man than a pretty girl could inspire in this old bachelor, who was reputed to have been a wealthy Ceylon tea planter and the victim of an unfortunate love affair. Many a time have I seen him make a dash out of the dining room at Banff, sometimes by way of a window, upon the arrival of some group of femininity, and thence by first train to Field. Yet, withal he was a most delightful companion on the trail or in the woods. When, on rare occasions, he deigned to visit Banff, he indulged in the extraordinary custom of taking a midnight swim in the icy waters of the Bow below the hotel. One morning the hospitable and popular manager of the hotel, Mr.

Mathews, said to me, rather excitedly, "Have ye seen Douglas Dick? He said he was going for a swim last night, but no one has seen him since." Telegrams were sent to Field. He was not there. The alarm was spread as Tom Wilson and the Mounted Police started a search. Three days later his body was found several miles down the river.

The C. P. R. officials, from the president down to the humblest section hand, were all very kind to us in allowing their permanent guests at the several hotels to ride on freight trains or even in locomotives. This was a great convenience, as, in the earlier days there was only one train a day. A wire to Supt. Niblock would always bring a favorable response. I remember one engineer, Carey by name, who, many a time when running "light," would blow the whistle, stop and pick us up, sometimes far from any station. Then there was Erickson, the section foreman with his railway velocipede, ever ready to take us on interesting trips up and down the railroad as long as they did not interfere with his work. One of the best trips was to take the morning freight from Field to the top of the Great Divide, go up to Lake O'Hara and return in the evening on a small flat car which would slide all the way down the "big hill." This was exciting enough when crossing trestles hundreds of feet above roaring torrents, but, all the more so when we realized that one of the wheels was only held in place by the track, as it had no pin. Col. O'Hara was accustomed in this way to visit his lake by taking the morning freight. One time he was a little delayed in finding his camera and rushed out to find that the train had already left. Happening to be in a somewhat irascible mood he started to write a telegram of protest to headquarters. About that time a terrible explosion was heard and word was brought back that the engine he intended to ride in had blown up, killing both fireman and engineer. We can imagine what happened to the telegram.

As much and more has been told and written about Tom Wilson, than most any other man in the Canadian Rockies, and anything that could be set down here would be largely repetitious. I always loved to visit the hospitable Wilson home in Banff. It was a simple log shack set a little way back from the main street. It was a treat to hear Tom tell about his experiences and travels in the mountains. He had a photographic memory and could describe in detail every view and every twist in any trail he had

ever traversed. He seemed to enjoy such memories. Yet all the time there was a merry twinkle of humor lurking in his eye and he was always ready for a good laugh. Tom outfitted my first real trip in the mountains, that to Mt. Assiniboine. Bill Peyto, Tom's right hand man, was head packer and the other men were Harry Lang and Ralph Edwards. I soon grew to admire Peyto, one of the outstandingly interesting characters of the Canadian Rockies. He was efficient, daring, highly imaginative, an excellent man with the horses and a good friend. He spoke in the low, quiet voice of the true westerner, but even so he spoke rarely. His forte was doing things, not talking about them.

One of the most interesting trips I ever took with Peyto was late in the fall of 1898. During August and part of September I had been laid up with typhoid. I went to the Adirondacks to recuperate and as soon as I could walk two miles in any one day I took the train for the west and arrived at Banff on the first of October. Tom Wilson got me an outfit with Peyto, Harry Lang and five horses. I happened to meet Sir William Van Horne by chance at the hotel. He said, "Wilcox, what are you doing out here so late in the season?" I replied that I was putting the finishing touches to a case of typhoid, by taking a three weeks' trip into the mountains.

"Better take a big grub pile," said he, "You may not get back till spring."

Sir William's prophecy nearly came true. We were out seventeen days and on fourteen of them there was wind, hail or snow. We went up the Bow, took the middle fork of the Saskatchewan and crossed the Howse Pass. Deep down in the canyon of Blaeberry River it snowed for two days harder than ever. When the storm was over we could see snow 4 ft. deep on the Baker Pass high above us. Peyto disappeared for half a day and came back saying that he had located the trail nearly to the top of the pass and thought we could get through. This we did the next day, thanks to Peyto's enterprise and determination. It was a fearful struggle and we had to break snow for the horses all the way to the pass. The snow was 4 ft. deep on the summit, there was absolutely nothing of pasture for the horses and in the morning our tent ropes were like steel cables. But our troubles were over. It was all down hill to Field and by afternoon we were among the autumnal

glories of the low country. As to the ill effects of typhoid, they had completely disappeared.

Three men who seem to me outstanding, are Peyto, Fred Stephens and Tom Lusk. It might seem invidious to omit a host of others, such as the always cheerful Ross Peecock, the erudite Bob Campbell or humorous George Haskins. Then there are many whose company on the trail has been denied me, such as Jim Brewster and Jim Simpson, but we have made up for lost time in other places.

Tom Lusk was a broncho buster from Texas, and a wonderful man with horses. There were no sore backs in his outfits and for this reason Tom Wilson had great confidence in him. Lusk was a short, slightly built man and like many of his kind rather taciturn and a bit shy. He always had a pipe in his mouth and, on one rare occasion when we could spare it, I offered Tom a snack of Scotch. "No thanks," said he, "if you let me have the whole bottle I'll take it, but what good does one drink do a man anyway?"

Fred Stephens, the Michigan lumberman, was a wizard with an axe and he had unending determination. If he could not get his party through a bad bit of country no one could. He cut a way through the forests of the upper Kicking Horse Canyon and got Habel, as the first tourist, if I am not mistaken, into the Yoho. Again, when we were at Fortress Lake looking for Mt. Brown and Mt. Hooker, it was absolutely essential for us to reach the other end of that body of water. One side of the lake was an impassable down-fall of timber. The other was a steep slope covered with snow-bent alders and willows. Just the same Stephens got us across the lake. In two days, with Barrett's help, he built a raft that would hold four men and a lot of equipment. There were roughly hewn oars, and a mast, to which we could attach a pack-cover for a sail. With two men rowing constantly we reached the far end of the lake in four and a half hours.

Henry Bryant, president of the Geographical Society of Philadelphia, and I once made an interesting trip to the country south of Mt. Assiniboine. Going up the most westerly head of the Spray, we turned S. and went down into the fire-swept valley of the Palliser. We intended to continue down this river till we could, if possible, locate a pass over the main range, as all that was new country. We failed to locate the South Kananaskis Pass as it must come down on the gravel washes in some obscure place, but this

was fortunate as it forced us far S. We got into some very beautiful country, while searching everywhere for a pass. The one we finally discovered was highly interesting photographically and rather steep on the side towards the Elk River. Climbing, photographing and taking angles for a map, we stayed here several days before turning N. to the Kananaskis Lakes, where we camped for ten days.

Bryant with unusual imagination had brought along a collapsible canoe, light and strong and with no visible indication that it might collapse far from shore. We camped on the upper lake, which is quite large and dotted with wooded islands. Unfortunately this lake has no fish in it. The lower lake is surrounded by burnt timber but is alive with trout. Here it was that Bryant was sitting in his canoe on the first afternoon, casting a fly and smoking a pipe when a band of seventy-five Stoney Indians in full war costume suddenly appeared marching along the shore. One can imagine their surprise at seeing a human being 50 miles from the nearest settlement and a boat where no boat had ever been before. They began to shout:

"Hey, you no fish here. This Stoney Indian Lake. You fish other lake."

In other words we could have the scenery, while they preferred something more substantial. These Indians were on their way to visit a friendly tribe in the Kootanie country and next day the whole file passed near our camp which was near the trail. Dressed as they were in their gayest costumes they made a magnificent display, but what interested us most were the little babies of two or three riding in baskets on the quieter ponies.

From the very first I always carried a camera of some kind in the mountains. Photographic records are a constant delight and serve to keep pleasant experiences alive in memory. Starting with a small camera I gradually worked up to an 11 x 14, which with the glass plates formerly used, made a heavy load. With such a camera one does not waste shots. The perfect composition is worked out and the precise moment waited for. Rudolph and I climbed Mt. Niblock with only two plates and Chris and I got the Big Bertha, as we called it, to the top of Mt. Temple. After such strenuous exertions, dark-room preparations are made as if they were a religious ceremony, and as the first negative comes out of the hypo one is more excited than when hunting grizzlies.

On photographic trips to places near Lake Louise I used a black canvas tent 6 ft. high, by 4 ft. square, in which I could change plates or develop, at any time of day or night. This idea provided an opportunity of getting any particular scene at its best. One could wait for hours or even days till such time as clouds and water reflections were perfect and develop the plates immediately after. Upon one occasion Jim Wood and I spent a week near the Giant Steps Falls in Paradise Valley. This was partly to get the falls when running full, and partly in order to clean up the scenery which had one blemish. There was a dead tree which leaned out and cut into the view, on one side of the falls, and we decided that it had to be felled. Unfortunately the tree stood on a steep bank, with little or no good footing for an axeman and at the base the trunk was more than 3 ft. in diameter. Jim and I worked on it for two solid days before we got it down. How I longed for Fred Stephens!

We were richly rewarded a few days later when I secured one of the best pictures I have ever made. A Chinook wind came up and filled the sky with writhing, swirling bits of torn cloud-like wisps of cotton wool, that made a wild background entirely harmonious with the dashing water.

Val Fynn and I had many hobbies in common and we became fast friends shortly after we first met. We took many short trips and climbs often accompanied by Fred Armbrister, who has done such admirable work with his photography. Val and I were a fairly well-balanced team as he was little less than a Swiss guide on rocks or snow, while my own fondness for "bushwhacking," or beating a way through the woods without loss of direction-sense, came in handy in the lower valleys.

I recall a delightful trip we once made. Taking the bus to Moraine Lake we spent the night at the camp and next morning walked through the lovely Consolation Valley and over the pass to the glaciers back of Mt. Fay. These are quite extensive and in one place a steep and rather sharp ridge divides the icefield into two parts. This ridge must be crossed in order to reach the alpine hut in Prospectors Valley. Arrived at the top it looked as if we had gotten into a rather difficult situation. On the other side was a vertical cliff nearly 100 ft. deep that seemed impassable. But Fynn was not stumped for long. Edging along a narrow ledge, he called to me to follow. This ledge took us to a steep gully filled

with ice and rocks, but with care we got down to the glacier far below. At nightfall we reached the camp and found Edward Feuz there with a party. It is wonderful how good a steak and bacon can be under such circumstances. The next day we crossed the barren and rocky Wenkchemna Pass in a wild storm with hail, thunder and lightning, and arrived rainsoaked and nearly frozen at the Moraine Lake camp. But it was not long till the warmth and comfort within and a delicious dinner restored us to normalcy.

Belmore Browne, the artist, got a tremendous amount of pleasure out of the mountains. He loved to camp out with friends or his family. He could pack and ride his horses with skill, cook an excellent meal and set up a comfortable camp by himself. We became good friends as was natural between two men who were both interested in depicting the beauty of nature, I with my camera and he with his marvellous paintings.

One day, in early autumn, Browne told me about a pretty lake, tucked away somewhere in the forest a few miles W. of Banff. This lake was very near the road to Lake Louise, but so thoroughly concealed that not one person in a thousand knew of its existence. Browne invited Armbrister and myself to spend two or three days at the lake, where we could all devote ourselves to our particular artistic hobbies in a delightful spot. The day of our arrival was one of rare autumnal beauty. Under a sky of cerulean blue, the small, round lake resembled an emerald surrounded by the gold of aspens and maples already touched by the frosts of a dying summer. It was not long before we had set up our teepee and arranged our equipment and larder within. While Browne was busily at work on a painting, Armbrister wandered off on one side of the lake and I the other. I came upon a beaver work-house among some aspen poplars and marvelled at the large-sized logs they had felled and cut for their houses. Shortly after, I saw a remarkable rare incident—a beaver swimming at midday and under a bright sun! I was lucky in getting some excellent movie shots and also the splash, with a boom, when the animal slapped the water before going under.

Then I went back to the teepee to get more film for my camera. My first glance inside showed that something was radically wrong. A large hole had been torn in the side of the teepee, flour and bacon were spread over the blankets, and an entire ham had disappeared. As I was peering into the semi-darkness I began to

imagine in some indescribable but uncanny way that something was right behind me. Turning quickly I was startled to see the largest black bear of all my experience, so close that I could have laid hand on him. This was the robber who had taken our provisions. It must have been his second or third trip. There was no use continuing on into the teepee. The other way was blocked. I realized that the bear must have been annoyed, not to say irritated at my presence and, what is even more important, he must have been one of very bad manners as he had torn a hole in our canvas instead of entering politely by the front door which was open. For a few moments of embarrassing quiet each of us waited for the other to move. Fortunately it was the bear. I shouted to Browne, who came on the run, and with rifle in hand we scoured the neighboring woods, but in vain.

"It's all over," said Browne. "We shall have to go back. It is against the law to shoot game in the Park and if we stay here the bear will be prowling around and annoying us all night." So we returned to Banff that evening, but we had enjoyed a wonderful day, Browne had finished his painting and we had secured some very interesting photographs. But we were consoled when it began to rain in the morning and so continued for three days.

In 1927 or thereabouts Ernst Lubitsch came to the lake from Hollywood with a large company of moving picture people to portray a play called "The King of the Mountains." Besides the mechanical force including recorders, stage setters, porters, and experts on photography, there were a number of actors including John Barrymore, Varconi and a lovely Alsatian blonde. The company remained six weeks at the lake and no expense was too much to preserve harmony, and make everyone happy, and the show a success. Guides and experts were sent out on the remote passes and hillsides in the neighboring valleys to study and approve scenes suitable to the forthcoming play. Moving picture shows, dinners and champagne suppers made the evenings glide by all too fast.

At the highest point to which horses could go, everything was unpacked and an hour or more was spent arranging loads for the porters and Swiss guides. Owing to the cumbersome cameras and heavy batteries some of the men had to struggle with loads up to 75 lbs. or more. Barrymore complained loudly, but the Alsatian in her high-heeled shoes climbed heroically over the rounded cob-

bles and rough stones. It was a wonder that the entire company reached the upper glacier without accident but they did.

Arrived on the pure white snow of the glacier, nearly two hours were spent arranging sets and practising preliminary scenes. The most important of all was where the villain, represented by John Barrymore, seizes the faithless wife, represented by the blonde, and dashes up the mountain side trying to escape from the angry mob. For this scene a snow slope more or less free of crevasses was selected, and all cameras pointed toward it, when a signal was given and Barrymore started on his 100 yd., up-hill dash. Now the snow was rather soft, the grade pretty steep and the altitude about 9000 ft. Barrymore was in no sense a mountain climber, but to all appearance the scene went off most successfully, except that the protagonist returned in a state of near collapse. But Lubitsch's brow was clouded. Something had gone wrong, yet he dared not tell Barrymore. Waiting a discreet interval he went over to Mr. Barrymore and said in a quiet voice, "Well, Mr. Barrymore, I am sorry to say that we have to do that last scene once more, again," to which the great actor replied that such an idea was the last in the world that he had in mind, though it was more tersely and shockingly expressed. Lubitsch, almost weeping, said that he was spending $10,000 a day on this enterprise, also that this was the principal scene of the play, and without it he would be ruined. In a word, Barrymore finally relented and did the scene over again.

Then followed a collation such as the snow-clad Rockies had never seen before and probably never will again. The pretty Alsatian put on a frock that would have graced a ball-room. Tarpaulins were spread out on the snow, cocktails were passed around, accompanied by sandwiches, chicken-à-la-King (which Lubitsch thought appropriate to the play) and ice cold champagne. Under a blue sky and bright sun, the helmet-shaped Mt. Lefroy and the inspiring slopes of Mt. Victoria on which avalanches were now thundering made a wonderful background for a group of people that was almost unique.

In the forty years between 1890 and 1930 many important changes took place. Glacier House had been practically isolated by a rerouting of the railroad track. Field, with increased traffic, had become little more than a railroad station, and Banff was more and more frequented by those who cared for everything but moun-

tain climbing. So the Chateau at Lake Louise became almost the last outpost for mountaineers along the C. P. R. On the contrary many new camps and rest houses had been built at such places as Emerald, O'Hara and Moraine Lakes, besides the Alpine huts and others far afield, such as Jim Simpson's place at Bow Lake, and the Assiniboine Camp.

In connection with the annual camps of the Alpine Club of Canada and those of the Trail Riders, which were models of efficiency and comfort, many new trails were opened up or old ones improved. Excellent trails were built through the Yoho, and under Hamilton's great engineering skill Paradise Valley and the Sentinel Pass were within the reach of average walkers, while the high level trail from Moraine Lake to the Wenkchemna Pass is possibly the most spectacular and inspiring in the mountains.

In the same forty years many changes have taken place in the physical world as well. The glaciers and snowfields have retreated alarmingly and in some cases to such an extent as to detract considerably from their former beauty and grandeur. But there was another change, in this case for the better, that came about so slowly and subtly that very few observers have ever noticed it. This is the very large restoration of the forests by natural forces. During the construction days and long after, great areas of forest were burned over, in the Bow and subsidiary valleys. In 1891 a very large percentage of all the forest, from the Bow Pass to Banff, was desolated by fire. The borders of Moraine Lake and Consolation Valley were a waste of bare poles and fireweed and so was the immediate neighborhood of the Lake Louise station. To look at them now no one would guess that a fire had ever passed through those regions. Given a rest, the forest will recover. In twelve or fifteen years the spruce and jackpines give enough cover to hide the previous fire disaster.

During the ten or twelve years before Tom Wilson's death a group of friends was gradually formed at Lake Louise who began to call themselves "Old Timers," and such, in a way, they were. Year after year, and at one time or another, there came together such well-known visitors as Prof. Fay, Dr. Hickson, Val Fynn, Dr. Eggers, Howard Palmer, Alfred Castle, Jim Brewster, Col. Moore, Tom Wilson, and others besides myself. Then, too, were the ever present Swiss guides, Edward, Rudolph, Ernest and Chris. Armbrister's room was known as The Junior Alpine Club and was a focal point for reunions which Tom Wilson frequented, time

and again, during the season. No doubt these cheering and sometimes hilarious meetings gave him great pleasure and possibly prolonged his life.

Those who have travelled in the mountains for years must needs have suffered and enjoyed many priceless experiences. They have, no doubt, seen pack-horses roll down mountain sides, or sinking in muskegs; they may have had to fight forest fires and they certainly have endured the discomfort and irritating delays of untimely summer snow storms. But again they have had the joy of exploring regions never seen before, gazing upon lakes unknown to man, or of reaching mountain tops never previously climbed.

Whoever ventures into the heart of the wilderness must possess many qualities besides love and appreciation of nature. He must use good judgment in order to avoid hazardous situations. He must show imagination and enterprise in making plans. He must have acquired skill in whatever particular line he is interested. He must never lose his determination to succeed, and above all he must have courage when the cards are stacked against him and everything is going wrong.

It was not alone love of nature that brought Col. O'Hara across the ocean year after year, nor that lured Sam Allen on his solitary wanderings over the Opabin Pass and around Lake Oesa. It has been only through skill and courage that the Swiss guides during many years have saved themselves and their charges from countless perilous situations on dangerous mountains. It was only determination and will power that saved the life of Tom Wilson when, after breaking through an ice bridge on the Pipestone, he had to walk for hours with clothes frozen stiff at twenty below. And it was only a sublime courage that saved the life of Mrs. Stone when marooned for seven days on a narrow mountain ledge without food, making one of the outstanding adventures of all mountain history.

Among the friends who returned to Lake Louise year after year, no less than among the members of our own Alpine Club and similar organizations everywhere there is a common bond that unites us all. It is the recognition of achievement, but of similar tastes and interests. It is the keen desire to read and hear about the adventures of others rather than to tell our own. In the great world of outdoors there is no room for envy or petty jealousy. There is so much to be seen and so much to be done that life is all too short to make more than a beginning.

After Forty Years

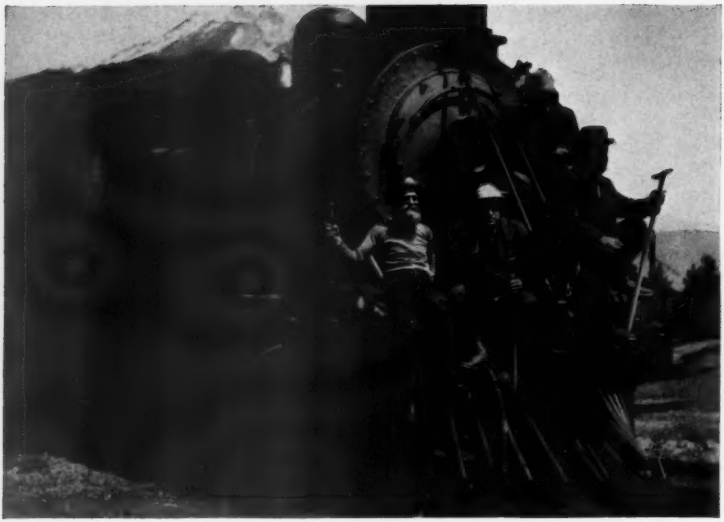
J. Henry Scattergood

ONLY seven of us who were founding members of the American Alpine Club in 1902 still survive. Of these, three—Prof. Parker, George Weed and myself—were among the early climbers in the Canadian Rockies and Selkirks.

Two summer vacation trips in Switzerland in boyhood and college days had developed my love of mountains. I was, therefore, only too happy to plan a return journey from Alaska in 1900 by way of the Canadian Pacific. In those days, before the cutting of the tunnel under the Selkirk Range, the railroad climbed through its many miles of snowsheds, passed the old Glacier hotel and through Rogers Pass—a long series of wonderful mountain views largely missed now by the tunnel route. Also up the Kicking Horse Pass in the Rockies, there was a grade of over 4 percent which required one locomotive for every three cars—usually two in front, one in the middle and one pusher for every train. This was before the spiral tunnels into the mountains were built. The Canadian Pacific hotels at Glacier House and Field were then in charge of two of the famous trio of Mollison sisters, who enthusiastically helped all climbing parties. The chalet at Lake Louise then consisted of one combination living and dining room with ten or a dozen small bedrooms. Tom Wilson was the standby for packing trips. Only the peaks nearest the railway had been climbed, *viz.*, at Field, Mt. Stephen (1887); at Glacier, Avalanche (1881), Sir Donald (1890), Swiss Peaks (1890), Eagle (1893), Dawson (1899), and some of the lesser mountains; at Lake Louise, Temple (1894), Lefroy (1897), Victoria (1897); up the Bow Valley—Hector (1895), Gordon (1897), and Balfour (1898). The next few years were to see first ascents of many more mountains within reasonable distance from the Canadian Pacific Railroad. Swiss guides were first available for the use of guests at the hotels in 1900—notably Eduard Feuz, Sr. and Müller at Glacier, and Christian Häsler, Sr. at Field. The guide Peter Sarbach had been brought over privately in 1897 by the group of Appalachian Mountain Club climbers and by Collie of England, who had made most of the above ascents in the Rockies. Walter Wilcox was

AFTER THE FIRST ASCENT OF MT. ASSINIBOINE, 1901
Left to right: C. Häsler, J. Outram, C. Bohren

ON THE PLATFORM OF GLACIER HOUSE, AUGUST 18, 1893
En route to Mt. Fox. Left to right: Demster, Stables, C. S. Thompson, H. P. Nichols, S. E. S. Allen



THE GOODSIR EXPEDITION, 1901
Left to right: C. E. Fay, J. H. Scattergood, J. Outram, C. Häsler, Sr.

SUMMIT OF MT. MOLLISON, AUGUST, 1900
C. Häsler, Sr., and J. Müller

Photos, J. H. Scattergood

just bringing out his delightful "Camping in the Canadian Rockies" with its exquisite descriptions of Lake Louise, Valley of the Ten Peaks (then called by him Desolation Valley) and neighborhood.

My climb of Sir Donald in 1900 with Feuz and Müller was the fourth time it had been ascended. There was in that year a formidable bergschrund that had to be crossed by a snow bridge. I well remember how thrilled I was, and how I recalled the famous picture of the bergschrund on the Zinal Rothhorn in Edward Whymper's "Scrambles Amongst the Alps." Besides Sir Donald, I had delightful days in climbing Eagle and Avalanche, and upon the icefalls of the Illecillewaet and Asulkan Glaciers. The former glacier has receded nearly a mile in these forty years, as shown by the measuring and photographing of the Vaux family of Philadelphia, carried on over a long period.

Coming E. to Field, I first climbed Mt. Stephen. The Cambrian fossil beds, with their large and small trilobites, were of great interest. The difficult places on the mountain were the traverse and ascent of the steep ice gully, and a few parts of the last 600 ft. of cliffs and ledges. The view from Mt. Stephen is one of the very best. It was my first sight of the mountains to the N. of the Yoho Valley, of the Lake O'Hara region, Victoria, Goodsir and the Ottertail group and away to the S. E., Mt. Assiniboine. My time was limited, but I had a fine walk on a crude trail to Emerald Lake. Also Prof. Michael, Christian Häsler and I, starting late in a clearing morning, made the first try of Cathedral Spires, the abrupt mountain above the Kicking Horse E. of Mt. Stephen. There is a long stretch of scree to master, then we mounted steeply in a long and care-needing difficult couloir of rotten rock. At the top of this we were forced to seek shelter from a terrific awe-inspiring thunder storm, with very close lightning flashes and ear-splitting thunder followed by long reverberations and echoes. Time was so limited after this storm that all we could do was to make a hurried try at the final steep cliffs above the glacier, but it proved too long and difficult in the short time available to us, and we turned back, some 100 ft. below the summit.

On my climbs of Mt. Stephen and Cathedral Spires, I had had good views from the N. of the Ottertail group of mountains, Goodsir, Vaux, and Chancellor. These were old names, but the topography was unmapped and confused in the few existing records. Accordingly I interested myself in a reconnaissance trip around

to the S. by the Beaverfoot and Ice River Valleys with a view to solving the enigma. I took Jacob Müller and Christian Häsler as guides, and had a strenuous journey. There were no bridges over any of the rivers except those of the railroad. Hence we had to go as far W. as Palliser to get to the far side of the Kicking Horse River, and work our way back for miles up that river and thence up the Beaverfoot Valley, the latter by an old Indian trail. Then the problem loomed of getting to the E. side of Beaverfoot River—a wide and deep stream. Almost a day was consumed in hunting for some place to cross, with success in the end by the felling with our little hatchet of an enormous tree on the stream's bank, thus providing a bridge which probably has lasted to this day. Then the problem later developed for us pioneers to cross the Ice River stream. Again a tree was felled across the torrent, but so small a one that it was a ticklish balancing operation to get safely over with our loads. We climbed the sharp peak which terminates the ridge E. of the Ice River Valley, and I named it Mt. Mollison after the hospitable manager at Field Hotel. From this summit we had marvelous new views of Chancellor, Mt. Vaux, and Goodsir, and I had no difficulty in straightening out the topography of the region. This reconnaissance trip whetted my desire to climb all of these three peaks the following summer.

Being entranced with the beauties of the O'Hara Lake region as seen from Mt. Stephen, I made the journey in from Hector with the intention of climbing virgin Mt. Biddle at the head of exquisite Lake McArthur, but bad weather turned us back, and I was forced to go on to Lake Louise and Banff. From Lake Louise I made the trip to Moraine Lake in Desolation Valley, as first named by Wilcox, later changed to the fine descriptive title of Valley of the Ten Peaks. The trail had just been built and was just good enough for pack animals. At the lake was a little shelter shanty. Later, in 1905, when I brought a party of eight to this lovely spot we found much enlarged quarters, and delighted in a three-day stay, with good fishing, a restful Sunday in Consolation Valley, and a fine journey around Mt. Temple over Sentinel Pass. On the latter we were much interested in seeing the Wenkchemna Glacier advancing its snout and E. side, and uprooting the forest trees.

I had one climb that first summer of 1900 at Lake Louise—a first ascent of the N. peak of Mt. Victoria, made with James (later Sir James) Outram, his younger brother William, and guides A. Clarke and Zurfluh. The weather turned very gusty, but we pressed on and made the summit after a stiff climb up a steep snow curtain followed by a razor-edge ridge with steep precipices on either side. From this N. peak to the higher S. peak there is a connecting ridge, absolutely knife-edge and full of dangerous pinnacles and gendarmes—a truly difficult traverse. This traverse climb was first made in 1909 by G. W. Culver, with E. Feuz, Jr. and R. Aemmer, and later by others. My trip in the Rockies that year ended with a short stay at Banff, then of course just beginning its wonderful growth.

Prof. Fay of Tufts College, the veteran president of the Appalachian Mountain Club and editor of *Appalachia,* induced me to write of my 1900 adventures for his publication, and thus was formed a dear and lasting friendship. It was natural, therefore, that plans were made for the summer of 1901 for Fay, Outram and myself to join forces with the special aim of making first ascents of Vaux, Chancellor and Goodsir. Accordingly, meeting at Field in July, 1901, we made our course up the Ottertail Valley and thence tackled the range connecting Goodsir on the E. with Vaux on the W. It was the usual succession of wearisome climbing up trackless slopes of forests, then open alpland and snow slopes and interesting rock arêtes. The unusual feature of Mt. Vaux proved to be a very steep snow col that had to be surmounted, and then a long pull up the steep névé above the great Vaux Glacier with its huge crevasses. Unfortunately a thunder storm developed, and although we waited a chilling half hour upon the summit (10,891 ft.) we had only fleeting glimpses of the world around. We were happy, however, to have made this first ascent of one of the higher peaks.

Descending from Mt. Vaux, we dropped into the great cirque at the head of the Ice River Valley and thence down to the camp which our packer had ready for us, having come around by the Beaverfoot Valley. Next day the attempt was made upon the S. (highest) tower of Mt. Goodsir (11,686 ft.). The rocks near this summit were unusually rotten and the greatest care was needed to surmount a 100-ft. cliff forming part of the arête. From the top of this, the route seemed certain to the summit some 500 ft. away

However, a unique condition of alternating, hanging cornices, first one side and then on the other, all upon a veritable knife-edge (that Profs. Fay and Parker two years later found quite free of cornices) made it necessary to beat away vast quantities of snow with our ice-axes or to turn back. The summit lay only about 300 ft. ahead and not much higher on the ridge. It was heart-rending not to gain this completed first ascent, but all four of us including Häsler, the guide, felt it would be folly to attempt to traverse those unknown cornices or attempt to break them off unless there were several hours available, and so we sorrowfully made our return.

Mt. Chancellor was the next great mountain in our program. From the camp in Ice River Valley, we climbed the range between it and the Beaverfoot, reaching the crest at peak four in the series S. E. from Chancellor. The traverse of this crest over mountain tops proved more difficult and time-consuming than expected as we were forced to find ways around or over many gendarmes, and the last stretch to get over the gap to Chancellor itself was not possible in the limited daylight left. Hence we made our descent to the Kicking Horse River, and the next day trekked wearily through terrible windfalls to the Ottertail railroad bridge and thence back to Field. A few days later the attack on Chancellor was resumed, this time with George M. Weed of Boston taking Prof. Fay's place, he having meanwhile sprained his knee on a trip that our same party took over Abbot Pass and into the Lake O'Hara and Lake McArthur region. Again we had aimed at making the virgin ascent of Mt. Biddle, but were foiled by bad weather. On this second trip we attacked the W. face of Chancellor, right up from the railroad. From a treeline camp we first tried the N. W. arête, but finding the rocks slanting the wrong way and getting more and more steep and difficult, we crossed the mountain and worked our way down to the great snow couloir that leads up to the col between Chancellor and the next peak of Chancellor ridge, on which latter our previous route had lain. From the col a four-hour climb on icy rocks requiring the greatest of care, brought us to the summit (10,761 ft.), another virgin ascent. The weather was fine and the views of the Selkirks, of the almost unknown peaks to the N., and of Vaux and Goodsir, and those near Lake Louise were magnificent. The descent to the col consumed almost as long a time as the ascent, so that it

was dark when the descent of the snow couloir began and camp at treeline was reached at 9.00 P.M.—a day of eighteen hard hours.

I had one more climb in 1901—the first ascent and traverse of Mt. Wapta. This was with Outram and Christian Bohren, the guide. It was a long day from Field—Burgess Pass in all its beauties, Mt. Field, the ridge to Mt. Wapta, and then a really difficult rock climb up precipitous couloirs, reaching the summit at 5.00 P.M. The descent was made rapidly by the great amphitheatre, thence to what has since become the Yoho trail to Emerald Lake and back to Field in the moonlight.

No opportunities for further climbing came to me until 1912 when on a business trip to the coast, I stopped off for two days at Lake Louise and climbed Mt. Lefroy by the usual but delightful route via Abbot Pass.

Paintbrush on the Heights

BELMORE BROWNE

NO clan on earth possesses memories that transcend those of the men and women who love the high places. From the "World's White Rooftree" to the once mythical mountains of the Moon; from the chalet-dotted slopes of the Alps to the ice-laden ranges of Alaska the mountaineers bring home their priceless mind pictures.

But just as gold is ground to powder in the current of a stream, our memories fade in the rush of modern life. What can we do to preserve them?

Having spent the better part of my life in trying to transfer mountains to canvas, I will pass by the camera and speak to those who have felt the desire to draw or paint the grandeur their eyes behold.

The ability to paint, starting from the mere wish to try, prospers on the recognition of past mistakes. And these mistakes, let me add, continue long after our ability to recognize them, has failed. As cold comfort one can cling to the thought that no mountain has been painted as well as it could be painted. Perfection in Art is a spiritual summit that no hob-nailed boot has disfigured.

The desire to try is the thing, for as long as you keep it alive it will guide you unroped and free to heights of happiness you never dreamed of.

At first you will draw or paint for your own pleasure. As your goal is knowledge you need not search for infallible rules. Be it paintbrush, pencil, or art's most primitive tool—a piece of charcoal from your campfire, it will bring you knowledge if reverently used.

The English possess to a high degree the gift of painting for their own pleasure. Just why this should be is baffling. The quiet tempo of English country life, early training or their method of teaching art may have played their part, but the fact remains that many English men and women have found lasting happiness in sketching the scenes that appeal to them.

From the point of view of the average American this might appear like carrying amateur rating a bit too far, but in the last

AN ALASKAN FIORD

AFTER THE STORM—HEAD OF ATHABASKA RIVER

From paintings by Belmore Browne

FEBRUARY THAW--SPRAY RIVER

CLOUD BANNERS—MT. LOUIS

From paintings by Belmore Browne

analysis, with due respect to sales and prizes, it is the attempt to paint that brings the richest award.

Lest my lifelong allegiance to the paintbrush should lead me too far I hasten to add that I am not asking my reader to irrevocably toss his ice-axe aside to pick up his painting tools. There are limits beyond which the bravest dare not venture!

When you begin to paint you may still be a mountaineer and breast the long slopes upward to the everlasting snow and, as Browning said: "Look down on all that had looked down on us."

It is true that your attitude towards mountaineering will change to some extent, depending on your own reactions. You may experience fewer actual ascents, but you will travel more mountain miles. You will have acquired a new and strange outlook, for instead of altitude accomplished you will think of objects not only seen, but studied.

Across the evening campfire you will listen, with the old thrill to your companions' talk of ice-slopes and hand-holds, but on your side of the day's score sheet will be the hours you stood in Nature's laboratory watching the cloud forms in their making, the bull moose with head submerged groping the floor of a sapphire lake and other forms and colors bewildering in their numbers and beauty.

More important still, you will have made notes in line and color. They will appear weak and valueless in the presence of reality, but the crudest line on paper may represent a vast step forward in knowledge, such as the subtleties of reflected lights on snow and how shadows are formed or why one peak appears to tower above its fellows.

Many years ago I led my tired pack-horses along the timbered ridges that break downward to Lake Magog. Mt. Assiniboine towered into the clouds, its vast form reflected dimly in the glacial water. I was looking for a place to camp and glancing through a fringe of stunted spruce I saw a young cow elk lying in a sheltered glade below me. An ice-cold stream splashed downward through its bed of mossy boulders, and flowers covered the hillsides.

After cutting some slender poles I pitched my teepee and rolled out my sleeping-bag in the soft, dry grass where the elk had rested. Soon the evening fire was started; the music of the horse-bells drifted up from the slopes below and while I smoked

and drank my tea the night shadows crept upward on Assiniboine's shoulders.

The sound of footsteps brought a young Austrian guide to my fire and while the night deepened he talked of his native hills and these strange new mountains where there were wild animals instead of hardy peasants. He urged me to join him in an ascent of Assiniboine on the morrow, as he wanted to qualify as a "Swiss" guide.

I refused on the grounds that having come so far to paint Assiniboine I would be in debt to my conscience if I climbed instead.

Thus began a companionship with the noble peak that has continued through the years. There is scarcely a valley or buttress in the region that I do not know. Even the trout that now flash their rainbow tints in Lakes Magog, Cerulean, Sunburst and Wedgwood, my son and I claim as stepchildren, for with the aid of Jack Martin, Alberta's fishery expert, we packed the eggs in moss-covered trays (to the disgust of our horses) and sowed them by hand in these waters that since the dawn of time had been barren of fish life.

"But," I can hear my reader say, "What have fish eggs got to do with pictures?"

The answer is plain—the feeling of kinship, even to a fish, is leaven to the love of rocky shore-lines, the shapes and colors taken by wind-stirred water and the laws that govern the reflections of peaks and snowfields on a lake's glassy surface. Recognition of beauty grows with intimacy. You may pass a certain spot a score of times and see nothing till a day comes when you stand aghast at your former blindness. While I have never stood on the summit of the "Canadian Matterhorn," the mention of its name conjures up as many memories in my mind as if I were indeed a guide who knew each hand-hold on its summit ridge.

Beyond the shadow of Assiniboine or any of its brothers there are vast stretches of little-known mountains that roll eastward to the plains or westward to the wilds of British Columbia. Here one may find only an occasional peak of qualifying height, but among their seemingly modest ramparts one will discover spots of unsurpassed ruggedness and beauty. You will lay aside your ice-axe for the axe of the woodsman and hew a trail through the windfalls of virgin timber. You will find lakes and streams that no fisherman's eyes have rested on and high mountain valleys where your horses stand knee-deep in mountain "feed" and snort

their disapproval of the moose or elk that disturbs their rest.

You will feel the same mental exaltation in reaching such a spot that you would feel in being the first to gain a difficult summit, and on these painting trips you will have adventures aplenty, for in packing horses beyond the blazed trail you will lead the life of early pioneers.

For the past twenty summers I have taken my family into the mountains surrounding Banff. On each trip we have tried to reach places we have not seen before, but vast stretches of untried country still beckon us on.

So grasp your paintbrush firmly, courageous reader, for, while its strange whims may lead you to the belief that you have clutched a witches' broomstick, it will carry you to visions you will never glimpse otherwise.

The Lunar Peaks

ANDERSON BAKEWELL

IF the present trend of events in Europe continues we shall have to go far afield for our expeditions. This has led to the suggestion that the Mountains of the Moon be investigated. To be sure, the Duke of Abruzzi and others did magnificent work in the Ruwenzori Range, but the peaks we are to discuss in this article remain, to our knowledge, virgin. These are the mountains of our own satellite—the Moon.

The first step in any exploration is a search for existing and available maps. Here is our first surprise. For no accurate map of the Moon exists.

From the time of Galileo astronomers, aided by the telescope, began a careful study of the Moon's surface. As a result the geography, or selenography, of that portion of the Moon visible from the earth was thoroughly explored and is now well known. This known portion consists of a little more than half of the Moon's surface. The rest remains unexplored. For the period of rotation of the Moon on its own axis is the same as that of its revolution about the Earth, with the result that the same side is always turned toward us. In past ages the Moon's rotation was far more rapid, but its proximity to the Earth has enabled the inexorable pull of gravity to act as a brake upon this motion, slowing it down to its present period.

It is possible, however, to look around the edges a bit. This is because of what are known as the librations of the Moon. The axis of rotation of the Moon is inclined about 6.5° to the plane of its orbit about the Earth. As a consequence at one time during the month the Lunar North Pole is inclined 6.5° toward the Earth, and a fortnight later the South Pole is similarly inclined. This is known as the libration in latitude.

The libration in longitude is due to the fact that while the Moon's period of rotation is uniform, its orbital speed is not. The orbit is an ellipse, and as the Moon approaches nearer the Earth its speed increases. The two motions, therefore, do not keep pace

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Note.—In the preparation of this article, the author for his outline has followed the plan used in *A Beginner's Star Book*, by Kelvin McKready (G. P. Putnam's Sons, 1927).

during the month and it is possible to see alternately a few degrees around the eastern and western edges of the Moon during the month. This amounts to about 7.75° each way.

Further, when the Moon is rising we look over its upper, which is then its northwestern edge, and in its setting see more of its northeastern edge. This is the diurnal libration, and permits seeing about 1° more of the lunar surface.

Yet another opportunity to add to the knowledge of the surface is given by the physical librations, or wobblings, of the Moon. The lunar equatorial diameter is about a mile greater than the polar, and the attraction of the Earth on this equatorial bulge, inclined 6.5° to the plane of the orbit, swings it sufficiently to bring a little more of the Moon's surface into view.

The result of these various librations, geometrical and physical, is that 41 percent of the lunar surface is always visible, 18 percent is visible at times, and 41 percent remains invisible—terra, or rather luna incognita.

The existing lunar maps are merely plan or base maps, representing the spherical surface of the Moon projected on a plane surface, much as it appears when viewed through a telescope. The mountaineer, with his peculiar interest in the ups and downs of things, depends to a great extent upon a good topographic map, and would feel the need of it here. At present the Carnegie Institute is sponsoring a committee for the study of the surface features of the Moon. This committee has undertaken as one of the first of its projects the production of an accurate topographic map. Undoubtedly this map will be ready long before we do any climbing.

The next step is to examine what has been written on the region and to study such photographs as are available. Fortunately here we are no longer at a loss. There is no lack of literature and excellent photographs have been obtained. Examples of these are given in the plates which will be referred to from time to time.

The Moon is at a mean distance of 238,837 miles from the Earth. Due to the eccentricity of its orbit, this distance is variable between the limits of 221,463 and 252,710 miles. A magnifying power of 60 is sufficient to diminish this distance to 4000 miles and bring several hundred features into clear relief. With the largest telescopes it may be brought to within 200 or 300 miles and objects 500 feet apart distinguished under conditions of good

seeing. The new 200-inch will reduce this to 25 miles. Skyscrapers, if they existed on the Moon's surface, could clearly be seen.

With the aid of the photographs we may now proceed with a study of the region. Since the Moon shines by reflected light alone, and the reflected light is that of the sun, it is apparent that while the full Moon represents the phase of most brilliant illumination, it shows less detail. Objects on the Moon are seen at their best only as they are brought into clear relief by their shadows.

By means of their shadows the heights of the mountains and the depths of the craters may be determined with considerable accuracy, since this gives the base-line of a triangle. Another method, in the case of a lunar mountain, is to measure the distance between the summit and the terminator at the time when the summit first catches the light. At this instant it has the appearance of a point of light detached from the bright part of the Moon (Plate 4).

The terminator is the division line between light and darkness on the Moon's surface. The advance of the terminator marks the approach of the lunar day. For a rapid survey of the more salient features of the Moon's surface we will follow the sunrise across the Moon, looking briefly at the major physiographic features as the light strikes them.

First let us look at the Moon in the full light of the Sun, the full Moon (Plate 1). Here the image is right side up, just as seen through field-glasses and telescopes using a terrestrial eyepiece.

The darker areas are depressions on the Moon's surface. Galileo called them "maria" or seas. Though they contain no water the name has been preserved. In reality they are large, low-lying plains, occasionally marked with ridges and small crater-like formations. The Sea of Conflicts is 280 miles long by 360 miles wide, covering an area of about 30,000 square miles.

Bordering the Sea of Showers are the Apennines, one of the largest and most important of the mountain ranges. Above these and across the straits connecting the Sea of Showers and the Sea of Serenity are the Caucasus Mountains, and to the left are the Alps.

Tycho is the most conspicuous of the great lunar craters. From it radiates the system of light streaks or light rays. These cross valleys, mountains and seas with no lessening of their definiteness until they fade out in the distance; the greater ones being as much

as 100 miles in length and from 5 to 10 miles wide. It was early suggested that these were traces of volcanic dust and ash blown out from the crater and carried along by the jets of hot escaping gases. The fine material thus carried settled down along the paths of the gases. This view has been to a great extent corroborated in the light of recent investigations.

Following now the terminator let us study the lunar physiography in more detail and look at the Moon at four days, or shortly after new Moon (Plate 2). The image is now inverted as seen in a telescope equipped with an astronomical eyepiece. In the erect image of the Moon, as seen with the eye or through binoculars, N. and S. are the upper and lower poles respectively, E. is to the observer's left as he faces the image and W. is to the right. In the inverted image all directions are reversed. N. and S. are transposed, E. is to the observer's right and W. is to the left as on a terrestrial map. The upper right of the photograph becomes then S. E., and the Sea of Conflicts is in the lower left of the photograph instead of the upper right.

The central peak of the walled plain Langranus rises to a height of more than 3000 ft. The walls are 10,000 ft. high and the diameter of the plain is 90 miles. On the side of the smaller formation called Wrottesley the borders of Petavius rise 11,000 ft. above the floor. Cleomedes, just below the Sea of Conflicts, is about 80 miles long, with great walls rising 8000 to 10,000 ft. Below this the ramparts of Endymion rise to peaks of 10,000, 12,000 and 15,000 ft.

As the lunar day advances (Plate 3) the first rays of the Sun reach Aristotle and Eudoxus. These present their most striking aspect at this time, when the long shadows cover the crater floors and the whole E. walls are brilliantly illuminated in the sunrise. The three conspicuous craters bordering the Sea of Nectar are Theopolis, Cyrillus, and Catharina. The last is the largest, with a diameter of over 70 miles from N. to S. A great col leads into Cyrillus. The floor of Theopolis is 18,000 ft. below the highest points of its ramparts. The central mountain covers an area of 300 square miles and the peaks rise 6000 ft. above the floor. The first mountain range, the Pyrenees, now comes into the light. These rise to 12,000 ft., between the Sea of Fecundity and the Sea of Nectar. The Altai Mountains (13,000 ft.) lie to the S. of Catharina.

With the advance of the terminator, the more direct light of the Sun begins to obscure objects previously brought out in relief. Most conspicuous here (Plate 4) is Clavius, over which the Sun has just risen. This is one of the most magnificent of the lunar formations. Its walls are crowned with superb peaks 15,000 and 17,000 ft. high. On the floor, which covers an area of 15,000 square miles, five craters are visible. Below this is Tycho, whose rays are seen to best advantage in the first photograph. Above these, and on the southern limb of the Moon, so situated that they come into view only at times of favorable librations, are the highest of the known lunar ranges. These are the Doerful and Leibnitz Mountains. Their great peaks are seen nearly in profile when visible and attain heights of 26,000 and 30,000 ft. respectively. Another range at the edge of the S. E. limb, the Rook Mountains, contains a number of 25,000-ft. summits.

The sunlight has just struck the high peaks of the Carpathian Mountains, below Copernicus. In the early light of the lunar day rise the Apennines, the Caucasus and the Alps, sweeping in a great arc around the Sea of Showers. The ring plains, Aristillus, Autolycus and Archimedes, lie within this arc. One of the peaks of the crater Eratosthenes, at the eastern terminus of the Apennines, rises 16,000 ft. and Mt. Huygens, the highest peak in the Apennines, reaches an altitude of 21,000 ft.

The peaks of this vast composite "coast range," it must be remembered, rise sheer from the floor of the plains. Even in comparison with our own mountains they more than rival the Himalayas. Yet the Moon is only one-quarter the size of the Earth. On the same scale our greatest peaks would crown ranges nearly 100,000 ft. high.

Plate 5 is an enlargement of the region of the Sea of Showers. In the center of the photograph is Mare Imbrium, bordered by the Caucasus, whose highest summits reach 19,000 ft., and below them are the Alps. To the S. E. of Plato lie a group of isolated peaks—the Teneriffe Mountains.

The smaller isolated peaks rising from the plains might well be counterparts of Shiprock. We might imagine Plate 6 to be a photograph of an expedition camped near the base of one of these. Only there would be no fire—sorry, no oxygen. In the accompanying photograph the plains of Mare Imbrium stretch away into the distance as the sunset lights up the rocks of the peak.

From the photographs the indications are that the lunar mountains are extremely rugged.[1] This would necessarily be so since there are no agents of erosion at work to level down the results of the original cataclysm. The veiled clouds, so tenuous, so ethereal, yet with the power to bring the highest summits down to the level of the sea, are not here to melt down the solid lands. There is only the work of a lesser gravity to pull down the fragments broken off by the action of the extremes of heat and cold and the impacts of meteors.

Before further organizing our expedition let us look further into the physical conditions surrounding our objective.

The Moon is the fifth largest of the satellites of the Solar System and the largest in ratio of mass to its planet, being $\frac{1}{81}$ the mass of the Earth. The diameter of the Moon is 2160 miles. Its density is 3.3 that of water as compared to a value of 5.5 for that of the Earth. How will this affect our preparations?

In the first place, one of the results of its smaller size and mass is a lowering of the value of surface gravity on the Moon. The surface attraction for bodies is about one-sixth that of the Earth. In other words, an object transported to the surface of the Moon would weigh only about one-sixth as much as it did on the Earth. The result of this in turn is a lowering of the "velocity of escape" for the Moon. This "velocity of escape" is the velocity which a particle must have to escape the gravitational attraction of its planet or satellite. A particle projected with a speed equal to or greater than this would fly off into space never to return. It is comparatively simple in celestial mechanics to calculate this velocity. This is done by determining the velocity which a body falling from rest at infinity would have on reaching the planet or satellite, and reversing it. The velocity of escape for the Earth is 11.8 km./sec., or approximately 7 miles a second. For the Moon it is 2.38 km./sec., or a little more than 1 mile a second.

According to the kinetic theory of gases, the molecules of gas are continually flying about in all directions with high velocities, colliding with one another and rebounding like perfectly elastic spheres. This is much the same situation as would exist in a closed tennis court, with an oversupply of tennis balls kept in continual motion. If, in their flying about and colliding, any of the molecules

[1] The closest approach to lunar climbing conditions is exemplified in the ascent of Shiprock. See *A. A. J.* (1940); illustrations facing p. 56.

of the upper atmosphere reach the speed equal to the velocity of escape they fly off into space and are lost. If they have sufficient speed, or if the velocity of escape is low enough, the whole atmosphere dissipates away into space.

The mean velocities of the molecules of different gases depends upon the molecular weight of the gas and the temperature, and can be readily calculated. At 0° C. the value of the velocity is 1.84 km./sec. for hydrogen, 1.31 for helium, 0.62 for water vapor, 0.49 for nitrogen, 0.46 for oxygen, and 0.39 for carbon dioxide. These values increase by 17 percent at 100° C.

However, the velocity need not reach the critical value for escape. At the extreme upper limits of the atmosphere the free paths of the molecules are greater, they have less chance of colliding and being stopped, and thus have a greater chance of escape. Even if the mean molecular velocity is one-half that of the velocity of escape, Jeans has calculated that the atmosphere would be reduced to half its original amount in a few weeks. In the case of the Moon any atmosphere which it may have had has been dissipated away into space, for the simple reason that its gravitational force was not great enough to hold it.

The consequences following upon this lack of atmosphere are many. With the protective blanket of air removed the Sun beats down in undiminished fury upon the surface of the Moon. And during the lunar night, with nothing to withhold it, the heat is as suddenly withdrawn and the coldness of outer space creeps in. The temperature during the lunar day rises to 261° F., and at night drops to —243° F.

There is no dawn, no twilight. These are the results of the diffusive effects of an atmosphere. The Sun appears unheralded out of the blackness of night, and two weeks later is as suddenly swallowed up from a black sky.

There is no blue sky above; no colorful sunset. The blue of our own sky is the result of the scattering of the Sun's light as it passes through the atmosphere. The shorter the wave length of light, the greater is its chance of being scattered as it travels through the molecules and dust particles of the atmosphere. The visible spectrum ranges through the colors of violet, indigo, blue, green, yellow, orange and red in the order of increasing wave length. Because of its short wave length blue light is scattered in all directions, giving the sky a blue color. At sunset and at dawn, when

the light of the Sun must traverse a greater length of atmosphere, the longer wave lengths of light become scattered and the Sun and sky near it are red. At the higher altitudes, where a lesser depth of atmosphere is traversed, the color fades toward the violet, and ultimately toward the black.

There are no clouds, no water, no rivers, no glaciers or snow on the mountains; no sound except that transmitted through the rocks. The avalanche descends swiftly and ominously, with no warning save the ground vibrations set up before it. At the same time there is constant danger of bombardment from meteors falling in unchecked by the resistance of the atmosphere.

It is rather difficult to imagine the high mountains bare of all forest; with neither timber nor snow line. The topography too, is a strange one. There are no drainage patterns, no regular valleys, no ridges; no glacial cut or hanging valleys, no moraines, no terraces. In the wildness and desolation there is neither vegetation nor life. It is a barren desert.

Yet this Doréic scene would not be without its own beauty. As one sets out from the base camp in a lunar sunrise the jagged peaks and craters rise out of the cold in an unearthly quiet, their gleaming summits like beacons catching the first rays of the sun which flash instantly from peak to peak. There is no transition. All is light and darkness. Far below the vast white desert and the lesser craters are etched out in black and white with knife-edged shadows. Taking one's eyes from the summit for a moment one looks out into the blackness of space at stars shining brilliantly, coldly, and without a twinkle, and with a clearness known only partially to those who have climbed in the great altitudes of our own planet.

In the shattering silence one can in fancy hear an almost audible hum of the planets as they swing by in their orbits.

Four times the size of the now visible Sun, the waning Earth adds its light to the scene, almost perceptibly spinning her blue seas and dark continents to light and shadow in turn beneath the covering of clouds.

Turning once more to the physical aspect, there is much that would invoke amazement at first, and a great deal that would require downright sound preparation if the summits of our goals are to be reached. The oxygen argument, for instance, would be settled once and for all.

It would be easy enough to call down to Camp V from 6000 ft. above: "Do you mind bringing the camp up here? There is a much better place for it." Only the observer below could not hear, because sound waves must have an atmosphere to travel through. Presuming that he got the note thrown down to him (this would be easy, there would be no wind to carry it away, for wind is only air in motion), he could do it easily enough. That is, if Camp V didn't weight over 300 lbs., or half a dozen 50-lb. loads. Furthermore, he could do it in an hour if the going were fairly good. A terrestrial 1000 ft. an hour is fairly steady going, and here you just divide everything having to do with gravity by six. A 30-ft. crevasse, for instance, would be no obstacle at all. You just jump across.

There would be two weeks of uninterrupted sunlight (save possibly for an eclipse) to make the summit in, though it would get extremely hot towards midday, or mid-fortnight. After sunset Earthlight lends sufficient light for continued work.

In addition to the bother of having to deal with oxygen (to say nothing of the disgrace) insulated clothes and special sleeping-bags would be in order. A range of temperature such as given above is apt to disconcert even the most hardy.

Face masks and special glasses are necessities too, for the whole range of the spectrum comes in undiminished, from the ultra-violet to the infra-red.

Of the actual rock climbing (for with no snow or ice it is to be all that) it is rather difficult to say just what the actual circumstances would be like. We can, however, make certain deductions.

The absence of an atmosphere and the ordinary terrestrial agencies of weathering and deposition precludes the possibility of sedimentary, and hence too of metamorphic rocks. Not much variety, for igneous is all that's left. The Moon has a mean density of 3.3 that of water, as compared to the value of 5.5 for the Earth. Assuming the Earth's rocky shell to be mainly dunite, if this body were formed from the outer layer of the Earth its density might be accounted for. This would be in accordance with the theory that the separation occurred due to the excessive rotational speed of the Earth, or that the material forming the satellite had been pulled out by the Sun shortly after the birth of the planet. In either case the heavier materials composing the Earth had sunk to its center, leaving the less dense, out of which the Moon was

The following is the complete nomenclature appearing on plates 1 to 4.

SEAS

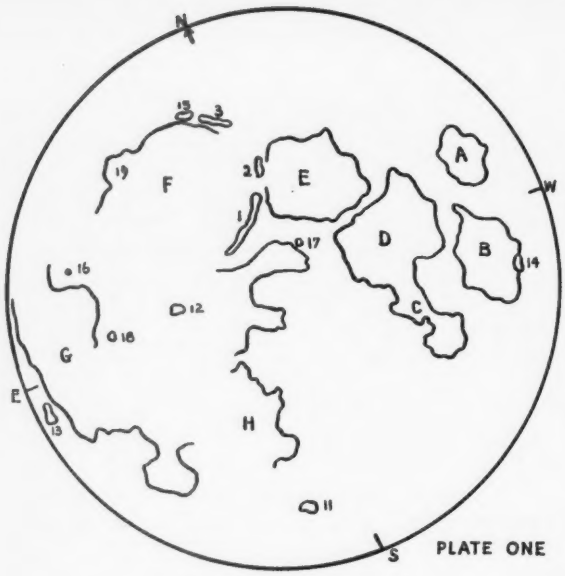
A. Mare Crisium (Sea of Crises, or Sea of Conflicts).
B. Mare Fecunditatis (Sea of Fecundity).
C. Mare Nectaris (Sea of Nectar).
D. Mare Tranquillitatis (Sea of Tranquillity).
E. Mare Serenitatis (Sea of Serenity).
F. Mare Imbrium (Sea of Showers).
G. Mare Procellarum (Sea of Storms).
H. Mare Nubium (Sea of Clouds).

MOUNTAIN RANGES

1. Apennines.
2. Caucasus.
3. Alps.
4. Pyrenees.
5. Altai Mts.
6. Doerful Mts.
7. Leibnitz Mts.
8. Teneriffe Mts.
9. Carpathian Mts.

CRATERS

11. Tycho.
12. Copernicus.
13. Grimaldi.
14. Langrenus.
15. Plato.
16. Aristarchus.
17. Manilius.
18. Kepler.
19. Bay of Rainbows.
20. Petavius.
21. Cleomedes.
22. Endymion.
23. Aristotle.
24. Eudoxus.
25. Theopolis.
26. Cyrillus.
27. Catharina.
28. Clavius.
29. Aristillus.
30. Autolycus.
31. Archimedes.
32. Eratosthenes.



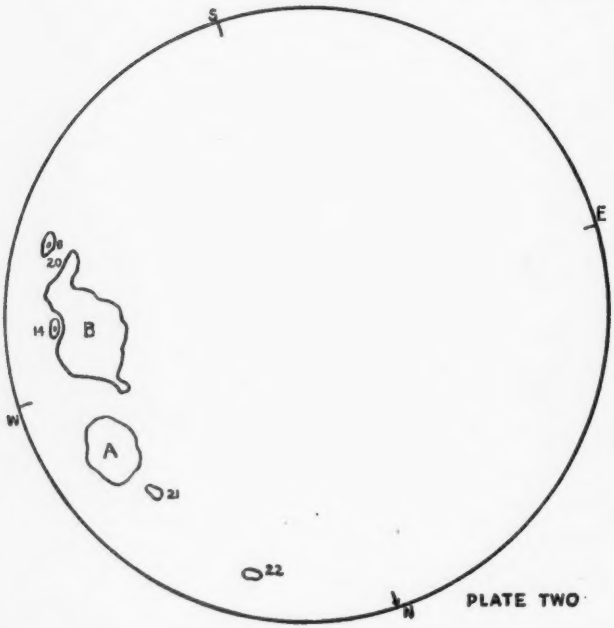


PLATE 1. Full Moon.

PLATE 2. Moon, aged 4.6 days.

PLATE 1. Full Moon.

PLATE 2. Moon, aged 4.6 days.

Photos, Moore and Chappell, Lick Observatory, 1938, 36-in. refractor

PLATE 3. Moon, age 7 days.

PLATE 4. Moon, age 10.35 days.

Notice in the darkness to the E. of the Sea of Showers the summits of the high peaks catching the light of the Sun as the Lunar day advances. The relative heights may be judged by the distances to the edge of the terminator.

Photos, Moore and Chappell, Lick Observatory, 1938, 36-in. refractor

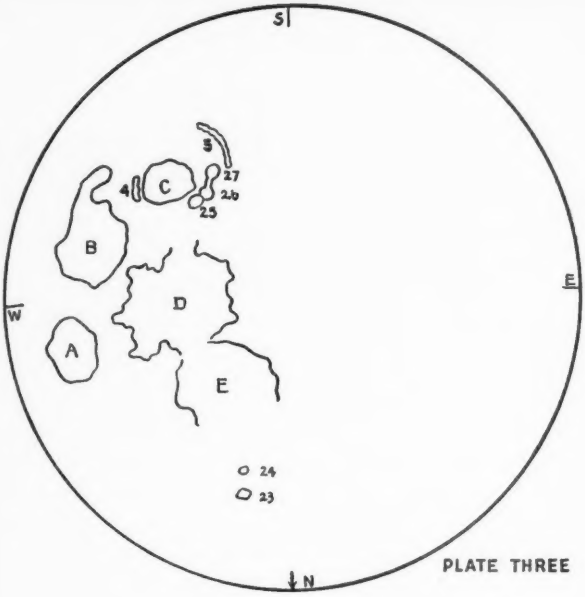


PLATE THREE

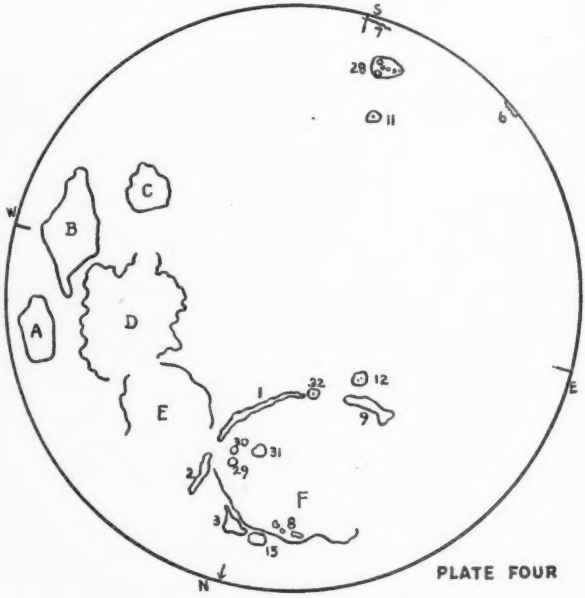


PLATE FOUR

PLATE 3. Moon, age 7 days.

PLATE 4. Moon, age 10.35 days.

formed, at its surface. We are dealing then, with essentially the same type of materials.

Evidence of the composition of the Moon's surface is given by the rate of cooling after an eclipse. As the shadow of the Earth passes over the Moon the temperature drops from 250° F. to —150° F. within an hour. This indicates that the lunar surface materials are excellent insulators; they have a small heat capacity, are poor conductors, and cannot, therefore, be massive rocks like granite or limestone, but rather light substance resembling in characteristics volcanic ash and pumice.

Further information regarding the composition of the lunar surface materials is obtained by photographing them in different lights. Near Aristarchus the rocks are very dark in a photograph taken with ultra-violet light, dark in one taken with violet, and invisible in one taken with orange light. The same phenomena can be simulated by photographing certain types of volcanic rock over which a thin layer of sulphur has been spread. It seems reasonable to infer, therefore, that the rocks near Aristarchus are probably volcanic and stained with sulphur, since sulphur is one of the more frequent constituents of vulcanism.

Being actually on the lunar surface, and able to gather more first-hand information, would assist greatly in solving the vexing problem of the lunar craters. This is fraught with interest, and their origin is still a matter of conjecture.

According to the meteoric theory the craters are the result of the impact of huge meteors, falling in with velocities of 20 to 40 km. a second and striking the surface with force sufficient to penetrate to some depth. The force of the impact, and the change of the residual kinetic energy into heat would be sufficient to melt the surrounding rock and produce the effect of the craters.

Objections to this theory are the fact that the Earth, too, would be subject to any bombardment of a magnitude sufficient to result in craters of such size, and there would be evidence of it at the surface, despite the lessened severity due to the blanket of atmosphere and the erasure of marks and traces by subsequent geologic agents. Again, all the lunar craters seem to be the result of direct hits; there are no glancing or side blows.

The other theory is that of lunar vulcanism. The lower value of gravity and lack of atmosphere are factors which must be taken into account. The effect on the one hand is to increase the range

PLATE 5. SEA OF SHOWERS (ENLARGED)
Mare Imbrium in center, bordered by the Caucasus (19,000 ft.), with Alps below

Photo Mt. Wilson Observatory, 1919. 100-in. reflector

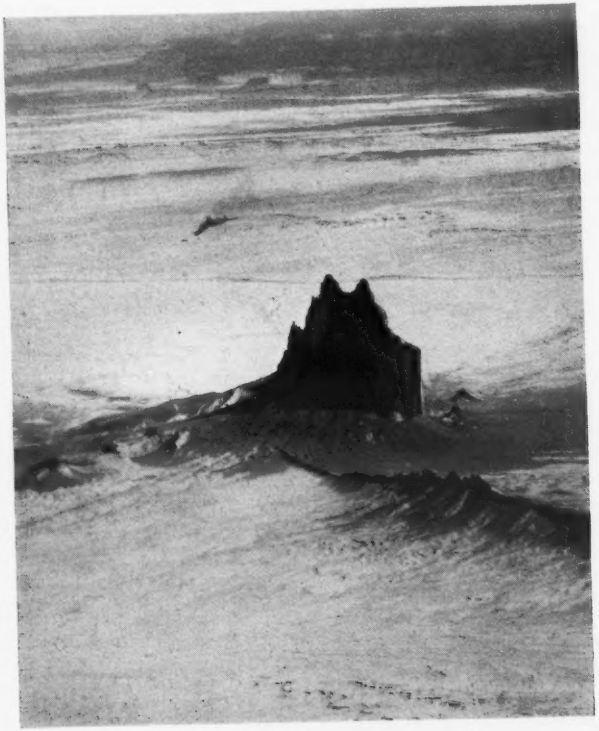


PLATE 6. SHIPROCK FROM THE AIR
Volcanic in origin and rising from a vast desert, this might well be a counterpart of one of the isolated peaks rising from the plains of Mare Imbrium (Plate 5)

Photo, Barnum Brown, courtesy of American Museum of Natural History

of the ejected materials, and on the other to augment this still further by the absence of a resisting medium. From observations of the volcano Cotopaxi, it has been calculated that the initial velocity of some of the ejected material has exceeded 2 km. a second. An eruption of the same force on the Moon would be sufficient to give this a range of over 1500 miles. The rays of Tycho extend to this distance. Furthermore, the ejected materials would be blown clear of the crater orifice and scattered so that the crater floor might even be lower than the surrounding plain. The same explosion scarcely blows the material clear of a terrestrial volcano, and a great deal of the ejected rock falls back into the crater mouth. The floors of the Earth craters are near the summit and well above the surrounding country.

Thus far we have considered the region from a mountaineer's point of view, and will leave the design of means of transportation to more ingenious minds. The primary requirement for this is a speed sufficient to get us clear of the Earth. As we have seen, the velocity of escape is approximately 7 miles a second. Given this, it is possible to get clear of the Earth's attraction. Unfortunately this means a speed of 25,200 miles an hour. Once clear of the attraction of this planet we could head for the Moon. However, this is a rather ticklish proposition. The Earth is rotating with an equatorial speed of 1000 miles an hour and moving through space at the rate of 18 miles a second; while the Moon revolves about the Earth with a velocity of 2000 miles an hour. This calls for accuracy and fine calculation in aiming. Then there is a rather troublesome difficulty connected with landing. Once within the attraction of the Moon the ship would be pulled toward its center. Now it is quite possible for a diver to guide himself once he hits the water, but impossible for him to effect a change of direction once in the air and headed for the pool; the medium he is in is not dense enough to permit effective control with the rudders at hands and feet, whereas the water is. An airplane maneuvers through the air because the air offers resistance to the tail and rudder, which give it change of direction. Without this they are useless.

Descending onto an atmosphereless satellite is much like diving into an empty pool. There is no way to check or guide one's speed. Here the speed of impact would be over 60 miles a second. We had best wait until these details have been worked out.

Mountaineering Photography—Old Style

W. H. Jackson

I AM an honorary member of three mountain climbing clubs. These memberships were conferred, however, not so much for mountain climbing alone as, I am led to believe, for what was gained by it. Photography was the incentive and the physical act of attaining a certain point of view was only incidental thereto, whether afoot, horseback or otherwise. Endowed with a natural fondness for the great out-of-doors, fostered, somewhat, by a year's service in the Civil War, I climbed, during my youthful days in Vermont, nearly all of the Green Mountain peaks, from Mansfield to Killington. But these were picnic trips, first steps in mountaineering, if I may call them such, that were to reach their greatest heights, some fifty years later on Mexico's Popocatepetl.

With these exceptions about all of my high altitude wanderings, as well as I remember, were in the Rocky Mountain section of our West in the '70s, when attached to the U. S. Geological Survey of the Territories (Hayden's) as official photographer. Topography being an essential part of the surveys business, it had much to do with the higher elevations in a mountainous region for triangulation purposes, and I, naturally, fell in for much of the same experiences.

As photography was an important feature in the work of the Hayden Survey a brief description of its methods at that time may not be amiss in explanation of the attention given to its outfitting, and that it wasn't a one man's job, as it is today, with prepared dry plates, films, and compact cameras. Briefly, a carefully cleaned glass plate was flowed over with collodion, then immersed in a bath of silver nitrate, and at the proper moment transferred to the plate holder for exposure in the usual manner. The plate still in the wet state (a necessary condition for its further treatment) was returned to the dark room for development and further treatment for the making of a negative. After a final washing it was dried, placed in a grooved box, and at the end of the day's work, varnished, and packed safely away. A portable dark room was necessary for these operations, usually a small tent lined with non-actinic material, or a hooded box supported on a tripod. With

everything assembled for work, chemicals, apparatus, and an ever-ready supply of water, the whole outfit would weigh around 100 lbs., depending upon the size of the camera in use at the time. These ranged from a 5 x 8 up to 20 x 24, the latter being the largest ever employed for a similar line of work in the West. These various sizes were required because enlarging methods had not yet come into general practice and a separate negative, for contact printing, had to be made for each.

All this, of course, had to be transported by pack mule, or otherwise, with at least two assistants, obviously limiting in mountainous regions the range of the photographer's quest for subjects. When at the "end of the trail," however, with greater heights yet to be reached, the pack load was transferred to the shoulders of the photographer, and his assistants, and the rest of the way made afoot.

I photographed for the Hayden Survey from 1870 to 1878, inclusive, all in the "wet-plate," collodion, period. Retiring from Government service in 1879 to carry on the same kind of work for myself, it was happily just as prepared dry plates and films were becoming commercially available. Freed from the impediments of old and cumbersome methods I had thereafter the joy and profit of taking my camera, single handed, wherever ambition pointed the way.

Across Wyoming in 1870, following the old Oregon Trail over South Pass, my first adventure into regions above timberline came in the Survey's exploration of the Uinta Mountains S. of Fort Bridger. Here I learned the importance of having water handy at all times. My water bags ran dry once when taking shots at some of the higher peaks of the range. As a thorough washing of the plate is necessary for its completion, the means, in this intance, was provided by spreading a black rubber blanket on the ground, throwing snow upon it, and have the sun do the rest.

Photographing the Yellowstone region in 1871 was almost entirely of its spectacular phenomena in hot springs, geysers, canyons, and water falls; but the next year, while en route again to the newly created National Park, a detour was made to Teton Basin, the Pierre's Hole of fur-trapping days, for the exploration of the western side of the Teton Range.

For the ten days the main outfit remained in this vicinity I spent nearly every daylight hour, in traversing with a few assist-

ants, the snowy fields of the high plateaus between the forks of Teton River. The central one of these, abutting the Grand Teton and overlooking the head of Glacier Canyon, afforded the best close-up view of the Grand Teton itself. This position was gained only after precarious encounters with snow drifts which have been described more fully in *The Pioneer Photographer* (World Book Company, 1929).

While I was busy with my work on Table Mountain, eleven men from the lower camp started out, blithely, the morning of July 29th, to climb the Grand Teton! One by one they dropped out until only the leaders, Langford and Stevenson, remained to claim first ascent of its almost impregnable height. A dramatic story of the adventure was published by Langford in *Scribner's Magazine,* but history sometimes reverses itself and what really happened figures largely in the history of the Grand Teton—even in the official Annals of the State of Wyoming itself.

The Survey transferred its operations to Colorado in 1873. At the same time James T. Gardner (he spelled it then without the "i"), formerly of the King Survey of the 40th Parallel, joined the Hayden organization as chief of the Primary Triangulation Division, bringing with him A. D. Wilson and two or three others from that well-known school of mountaineering. And Colorado is a mountainous region, having within its borders most of the 14,000-ft. peaks of the United States.

It was under Gardner's direction, in line with breaking up the larger and more cumbersome organization into smaller units, that I was assigned a Photographic Division, independently of all others, with the regulation two packers and a cook, and one or more extras from among the unassigned young men, usually "naturalists," to act when needed as my assistant. With the usual allotment of a pack mule for each man, the Photographic Division made quite an imposing impression as it strung out on the trail. As to field work I was given a modified *carte blanche* to choose my own subjects, but mainly within the territory covered by the other Divisions.

The itinerary Gardner outlined for my first season in Colorado was from Denver, "To Long's Peak, thence south along the Snowy Range to Gray's Peak and from there work around by way of Pike's Peak to a rendezvous of all Divisions in South Park, after which I was to cross the Sawatch Range over into the Elk Mountain country beyond."

PHOTOGRAPHING THE TETON RANGE FROM THE W., 1872

THE THREE TETONS FROM THE W., 1872

Photos, W. H. Jackson

SUMMIT OF FRÉMONT'S PEAK, 1878

Below—left to right: James Eccles, Holmes, Richardson. Above—left to right: Payot, Hayden, Wilson. Blurred center due to overheating in making dry plate

BAKER'S PARK, COL. IN 1874

Left to right: Endlich, Rhode, Wilson

Photos, W. H. Jackson

It was the 25th day of May when I left Denver with seven pack mules in my train and outfitted for making 11 x 14 negatives. It was too early for such an assignment and my most vivid recollection of the first part of that trip is that from Estes Park to James Peak we were constantly bucking nearly impenetrable snow drifts in getting up to the foot of the range; and that a little later, at Gray's Peak, I first climbed above 14,000 ft. Not much of an honor, as an easy horse trail leads to the very summit.

Over on the headwaters of the Arkansas, Mt. Elbert, highest of Rocky Mountain peaks, offered a temptingly easy ascent and, accordingly, with a couple of packs and two assistants, overnight camp was made near timberline for an early start for the summit. But "The best laid plans * * * gang aft agly." In the morning we found nearly all our animals paralyzed, "locoed" from browsing on that poisonous weed during the night. Compelled to abandon the attempt for the time being I next tried La Plata where the going, at first, was much harder as the pack could be taken only a little above timberline, the remaining 3000 ft. or so being negotiated afoot. But it turned out to be a day of intermittent storms sweeping over the peak and it was nearly sunset before I finished making a six-plate panorama of the entire horizon. A week later, over near Snow Mass Mountain, unlucky little cropped ear Gimlet, carrying the boxes containing my precious negatives, had a tumble that resulted in the loss of nearly every one of them, including the La Plata series. Under the circumstances there was nothing else to do but about face and make them all over again.

My work for the season came to an end with photographing of the Mt. of the Holy Cross. So much has been written about it by Fryxell and others from my original story in *The Pioneer Photographer,* that I mention it here only as one of the most difficult of my mountain-climbing photographic experiences. From its N. E. base, on what is now called Cross Creek, there was a 5000 ft. climb, approximately, to the summit of a ridge that faced the mountain with its distinguishing feature. Distributing the 100 lbs. of photographic outfit between myself and two assistants this summit was reached only to find ourselves enveloped in dense masses of clouds. Remaining until nearly sunset, in hope of a clearing, we finally stowed the apparatus under protecting rocks and retreated to timberline where we passed the night, supperless, beside a small fire. Morning came on beautifully clear with everything in our favor, but on reaching the summit of the ridge again, the

matter of water for the development and washing was of some concern. The day before all the snow banks had running streams from them, but this morning everything was frozen as tight as a drum head. A little exploration, however, discovered a pot hole among the rocks from which enough water was obtained to complete the photographic operations. Two 11 x 14 and four 5 x 8 and stereographic negatives were made, but it was nearly noon before they were safely stored away in their respective boxes. We got down from that mountain in very much less time than it took to go up.

In 1874-5 I was chiefly occupied with the archeology of the Southwest, but before extending my operations beyond the borders of Colorado I spent much time and effort among the rugged peaks and passes of the San Juan Mountains, reaching the summit, however, of only one of them, Sultan, when I accompanied Wilson for the fine view of the "quartzites" to be had from it. This was another instance of two climbs for one object, being driven off the peak the first time by a storm.

There was enough climbing over the high passes in and out of Baker's Park to have ascended most of the higher peaks of that region, but the limit upwards was fixed by the endurance of the "pack" in making it. Late in September of 1874 I crossed the 12,400-ft. pass from Las Animas to the San Miguel, at the foot of Mt. Wilson, only to be caught in a heavy snow fall in returning the next day. It was over this same pass, a year later, that I took my 20 x 24 camera, about as strenuous an undertaking as I ever made, not only because of the horrible trails but of the difficult photography under such conditions. This was typical of the other exposures made with that over-size camera among the San Juan Mountains by which I brought back twelve fine negatives of the largest size ever made under like conditions.

My last year with the Hayden Survey was signalized by climbing Frémont's Peak along with a party of seven, the first ascent, as far as known, since Frémont's time thirty-five years previously. My wet-plate outfit being impracticable on this occasion, I prepared six dry plates the night before with a collodio-bromide emulsion, by which I made that many negatives from the summit, three of which furnished detail for Holmes' fine panoramic sketch of the great glacial field lying N. E. of the peak.

This was my first successful use of dry plates for landscape photography.

A Bugaboo No Longer

RAFFI BEDAYAN

WE were camped at last timber, just a stone's throw from a massive spire. Breakfast was over. Sitting under the fiery August sun, we were contemplating another attack on the bugaboo of the Bugaboos, Snowpatch Spire. All was not well, however. Questions were raised as to why we should again attempt to climb the E. face when we had been there only a few days before. "The overhangs will be too much to get over," said one of the climbers lazily. Another chirped up, "Why not try the W. face? After all, a possible route goes three-quarters of the way up." "No, we saw the top section of that route from Bugaboo Spire yesterday; it didn't look very promising," said the third man. Finally the fourth spoke, "I don't think we have investigated all of the possibilities on the E. face. Of course, we were up just above the overhang where the last party was stopped. We studied the face above the snowpatch, but did we go farther and 'rub our noses' on the overhangs?" "No."

Thus you find us, four Sierra Club members, Jack Arnold, Fritz Lippmann, Edward Koskinen, and I, camped in the Purcell Range of British Columbia, discussing the potentialities of the Snowpatch Spire. Beginning with Conrad Kain and culminating in the gallant attempt of Fritz Wiessner, nine attempts over a period of twenty-four years had put Snowpatch in the "unclimbable" class. All had admitted that here was a tough one to crack. "To climb this spire would be foolhardy, reckless, an unnecessary risk of life." "It would take no brains, only brawn, to engineer a safe and sane route." "If they put Snowpatch in Yosemite Valley it still would be many years before someone climbed it." These conclusions, and others, too, had increased our desire to try our engineering technique on North America's number one climbing problem.

Three days of fair weather had passed, but all we had accomplished was the ascent of Bugaboo Spire and a thorough reconnaissance of Snowpatch. We were well aware that the weather was unreliable; it could break within an hour. If anything more were to be climbed we had to start moving quickly. Two of the

party said they were not interested in attempting the E. face the second time, merely to be absolutely positive that the route wouldn't "go." The other two, however, had different ideas concerning this route.

Jack Arnold, originally from the junior section of the Colorado Mountain Club, was one of the optimists who had hopes the E. face could be turned. Before coming to California, Jack had done all of his climbing among the 14,000-ft. peaks of Colorado. Upon joining the Sierra Club he immediately became an enthusiastic member of the climbing group. Eighteen months of climbing had proved to us that he was reliable and steady in ascending extremely difficult problems.

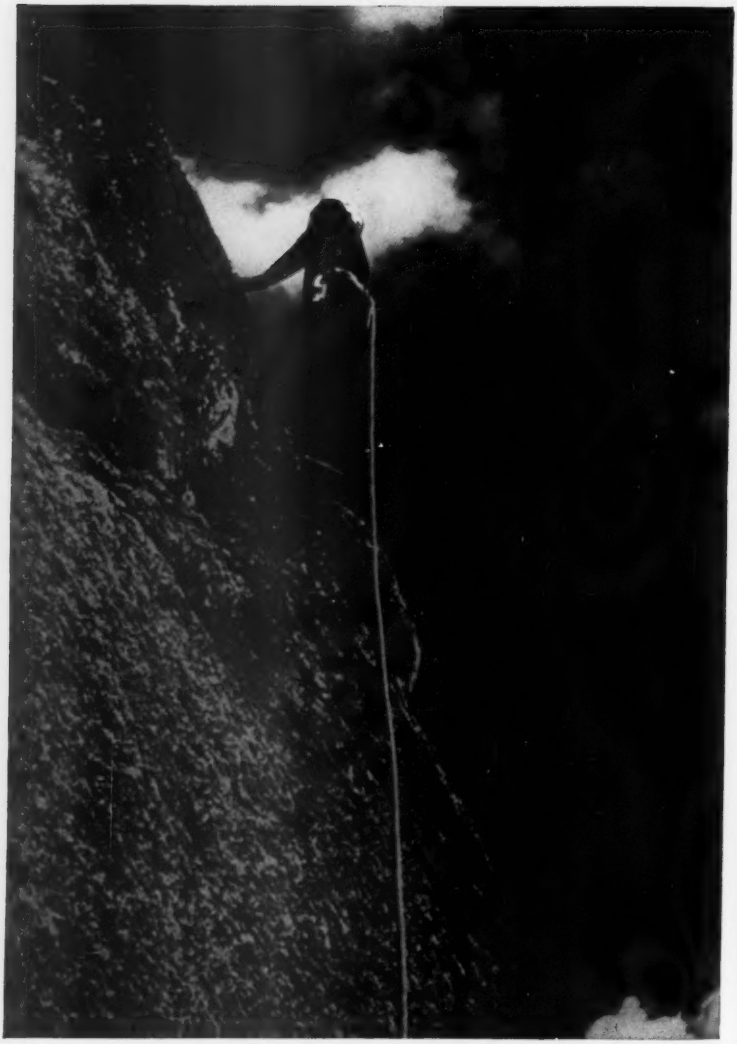
Having made numerous first ascents in British Columbia, the Cascades, New Mexico (Shiprock), and in Yosemite Valley, I felt better prepared than I had been on the unsuccessful 1936 Mt. Waddington expedition of the Sierra Club. I couldn't resist this opportunity, so I went too.

Time was short. Quickly we began to gather equipment for the climb: carabiners, pitons, rope, hammers, food, camera, various personal desires and, last but not least, first aid. Anticipating that a bivouac would gain time in the event the route proved too "interesting," we added extra food and a primus stove with a dural kettle to the already overburdened knapsacks. Finally as an afterthought a waterproof "B-sheet" (Zeltsack) was tossed in, just in case the weather proved to be unkind.

Having firsthand knowledge concerning the route on the spire as far as the traverse in Wiessner's "overhanging zone," we planned to scout the upper regions of this particular pitch the afternoon we left camp. Arnold and I pushed up to the S. E. side of the Snowpatch notch quickly. Leaving our nailed boots and ice-axes at the base of the notch and changing to crepe-soled shoes, we climbed to the N. E. side of the notch, found a good site for a bivouac, and cached our overnight equipment. Jack offered to lead up to the overhanging traverse. I was glad to have someone else try his hand, for I had already led this particular part of the climb two days before. Our route began 75 ft. S. of the notch. Using a sequence of two large gullies and various cracks which led for 280 ft. on moderately difficult climbing, we arrived at a small sharp ridge which terminated at the base of the overhanging traverse. Noticing pitons already placed, we assumed

SNOWPATCH SPIRE FROM BUGABOO SPIRE

Photo, S. Austin



BEDAYAN LOOKING FOR ROUTE UP LICHEN-COVERED GRANITE OF SNOWPATCH SPIRE

Photo, E. Koshinen

that this had been done during the summer of 1938. We had been taught to remove and replace all unknown pitons found on climbs. We did exactly that to those we placed, as well as the magazine of hardware we found on this pitch, for we knew that expansion and contraction of the rock, plus the oxidation of the metal, might soon render all pitons unsafe. My belaying position was not quite what might be termed "bomb-proof," so I hurried up this pitch—an 80-ft. lead with a vertical rise of 30 ft.—as soon as Arnold had an adequate belay for me. We were now at the highest point reached by the 1938 party.

Wishing to conserve our energies, I took the lead. Tiptoeing on high-angle friction slabs, we reached the base of the snow-patch in a few minutes, soon to enjoy a long, cool drink from the small stream emerging from the five-acre snowfield. Having satisfied our desire for water, we began a systematic study of the face above the snowfield. It was very obvious why so many climbers had been discouraged from attempting an ascent. Foreshortening was such that it had baffled all persons searching for possible routes. Every rock on the huge face seemed to overhang. In our extremely difficult climbing in Yosemite Valley, we learned to appreciate the trees that pushed themselves up here and there on sheer faces. They were one of the best friends a climber could want. Here we had none. We knew we had a "rock-engineering" problem on our hands. This didn't mean we had to cut steps in the rock, hang by pitons or use other artificial aids. We would, however, want to place pitons, use adequate belays, anchors, and double rope technique—a few of the methods involved in engineering a climb.

Climbing along boulevards of lichen for 400 ft. we concluded that further exploration would leave us on the mountain in darkness. A hasty retreat was advisable. After a few additional minutes of concentration on the network of overhangs above, we built a cairn, pulled out the anchor piton, then left for our bivouac. Climbing down the overhanging traverse was no easy job, since semi-darkness had obliterated most of the handholds. A cold wind had come up and was doing its utmost to chill us before we got to leeward of it. The two rappels before crossing into the notch were most welcome, since the mechanical energy from friction kept our jeans at the correct temperature.

At the bivouac shelf we smoothed out the rocks as best we could, had dinner of raisins, cheese, nuts and water, pulling the B-sheet over our heads, settled down for a long cold night. During the course of the night I found my ears between my knees, trying to keep warm. Suddenly an image of a face, a kind face of an elderly lady, was looking at me, questioningly. She was a friend who had been concerned with my vacation plans. "I thought you were going on a vacation to get some rest." "That's right." "Well, what are you doing here?" "Resting." The image vanished as quickly as it had appeared, leaving me colder than a snowbank. What was I to tell her if we were fortunate enough to make the summit? My troubled thoughts came to counting the pitons we might yet have to use. Then, fitful slumber.

Two hours after dawn we were putting the finishing touches on a modicum of cheese and chocolate. We noticed our food bag had been broken into during the night, a large hole in one corner giving ample evidence. Checking to see what was gone, we missed the tablets brought along to furnish the necessary vitamins absent in the concentrated food. Further investigation indicated that a "snafflehound" (our name for a rodent of undetermined species) had done this to us. Gathering what equipment we thought advisable for the attack, we began a slow trek to our previous high point, Arnold again leading, driving in the pitons for safety, while I followed later to retrieve the hardware. The sun was hot and we weren't, so we stopped at the cairn for food and a short siesta.

An hour later I took the lead and advanced toward the huge overhanging face on the mountain's left flank. We attempted a number of different combinations designed to crack the overhangs above us, but they still said "no" after an hour of hard work. Dropping back from the lead, I walked along a large ledge towards the middle of the spire. We now were directly above the snowfield. The face appeared to be well broken into well-rounded slabs and shelves of hard granite, just right for pitons. Jamming in a leg here and an arm there brought me over two short vertical chimneys. Zigzagging around an overhanging nose and a ledge, I arrived on a large sloping shelf with no apparent upward outlet. Jack followed, anchored to a piton, and I began a search for a route up or around this massive overhang.

Placing pitons on this shelf, devoid as it was of proper cracks, was no easy trick. A piton would go in two inches, start to fold

over. Finally I sank in two pitons for "moral support." These wouldn't take a direct fall, so I had to be careful. I had been studying an overhanging nose with a six-inch split on one side, but now, on closer examination, the split looked very bad, since the handholds were wrongside out. The sudden inspiration to attempt this nose died after I had got just two feet off the shelf. I looked for something simpler. Placing another "moral support" piton, I gave a high-angle face to the left the once-over. It had possibilities. Maybe it could be done with friction. But the protruding discolorations weren't sufficient to humor my touch-and-go instincts. Removing my moral support I returned to the center of the shelf. Here, if anywhere, we must find the solution to this perplexing problem.

A nearly vertical vein of quartz, protruding from an offset 70° slab of granite, extended up to the base of an overhang, 20 ft. above. The quartz itself was broken well enough to provide the necessary steps. On both sides of this vein, however, handholds were microscopic, the support for the feet still less convincing. So it had to be the quartz vein all the way. Checking with Arnold to see if the rope ran freely, I began placing pitons in the vein. The high-pitched ring of the first piton told me it was good enough to take a direct fall. Snapping in my rope I climbed up a few feet and put in another piton, advanced to the next protruding nob of quartz, reached to my side for another piton. I was halfway up the pitch—but had none left. Arnold being unable to send any up on the belay rope, I had to climb down to replenish my supply. Back I climbed to the highest piton, inserted another to protect my advance, then looked desperately for a "bucket" handhold, which didn't exist. There was, however, a small patch of some minute plant about a foot higher than I could reach from my present stance. Moving up a little on the vein I was able to dig out this small garden with my right hand, uncovering a small depression, large enough to maintain a balance with two fingers, a linger-but-don't-stop handhold. Suddenly on my left I caught sight of a moving object, a small brown animal, scampering on the friction pitch that I had given up. To my chagrin I recognized the critter. It was undoubtedly the "snafflehound," romping around full of our vitamins. I needed them now.

Soon I was able to hammer in another piton. Three steps brought me underneath the overhang. A scree-covered mantel-shelf

large enough to permit a finger traverse, continued on a horizontal plane. Driving in a "bomb-proof" piton I began traversing. There wasn't much of anything to rest the feet on while doing this little piece, and it seemed best to do it quickly. Eight feet and a few seconds later I was circumnavigating a huge chockstone at the edge of this traverse and the lichen-covered granite slab. Standing on the chockstone I gave vent to my feelings, a hoarse yodel. Arnold came up a few minutes later to see what was wrong.

Increasing my stock of hardware, and again anchoring Arnold, I ascended a small high-angle gully, traversed to the right and found myself under a chimney blocked with two chockstones. Placing a piton at the base of this chimney and covering two points of the compass at once I was able to surmount these two obstacles. Another piton just above the chimney was an excellent safeguard, since the next shelf didn't have a suitable crack. Above was a three-inch crack with a blank left wall, and a right side that didn't possess anything which might be termed useful—it simply dropped off to the glacier below. Twelve feet of this three-inch crack and I was able to stand on a foot square pedestal. Not having enough rope to continue I anchored myself, and gave Arnold the come ahead signal. As he arrived we were sure both of us couldn't stand on the pedestal at the same time, but somehow we did.

Continuing up the crack, I noticed it terminated in another overhang. The wall on the left seemed to continue with no breaks, while the right side still dropped to the glacier. Our fond hopes were about to be dashed, then, for there was no other way to ascend this pitch safely. I thought I might as well see the worst face-to-face, however, since it was only 20 ft. away.

I hadn't gone 15 ft. when I saw that the wall on the left broke away into the main face. I immediately crossed over to a good stance and belayed Arnold up to me. Things were looking a great deal better. Proceeding once more, I noticed a pencil of light on the loose granite blocks, and crossed over to check its source. I was amazed when I saw the summit, and so was Jack, who came up quickly. We hadn't expected the summit so soon.

Climbing the dome to our left we found it somewhat lower than the N. tower. Back to the N. we hurried, ascending the tower by a spiral route, meanwhile looking down the W. face on which so many optimists had worked from the ground. We were glad we had climbed the E. side instead. Even our snafflehound would

E. FACE OF SNOWPATCH SPIRE FROM BASE CAMP

Photo, R. Bedayan

BEDAYAN BELAYING ARNOLD UP OVERHANGING TRAVERSE

Loose rope used for slings

Photo, E. Koshinen

find the W. face uncomfortable. Seven hours after leaving our bivouac shelf we reached the summit. Arnold and I built a large cairn, leaving a register beneath it. We were both concentrating on the surrounding terrain, when a shout punctuated the silence. Far below on the glacier two tiny figures were waving their arms violently. Koskinen and Lippmann, returning from a reconnaissance in the Howser group, had seen us against the late afternoon sun. We returned their salutation with unharmonious but very satisfying yodels. An hour having slipped by, we made hasty preparations to leave. We stowed all of the hardware in the knapsack since our descent would require no more. Four long rappels, interspersed with some descent on foot, and we were in the bivouac recess, three hours from the top. Picking up the rest of our equipment we climbed down to our boots, only to find that, not content with vitamins, the snafflehound had eaten away the boot tops and tongues. But we conceded this sacrifice, willingly and happily.

Climbing Notes.—A few statistics and statements may be of added interest. Even with a route established, the climb would seem still to require careful preparation. Those who follow the route should not be susceptible to acrophobia. We used a 120-ft., ½-inch Manila hemp climbing rope, and a 200-ft., 5/16-inch rappel. Pitons were used in twenty-three different places; of these two were used for direct aid. Ample equipment should be taken, and the pitons now in place (very few) should be replaced, since the attempt was made to retrieve most of them. Pitons of several types, thicknesses, and lengths are necessary. A larger climbing party will, of course, somewhat increase the climbing time.

Wind River Holiday

BECKETT HOWORTH

WE had discovered a new game, guessing where the road would go next. It could be seen only about a hundred yards ahead. It really should have been called an automobile trail instead of a road. Fortunately the station wagon was built high, and with good management only occasionally did its bottom scrape a half-buried boulder. The country was hilly, with little hummocks, and larger hills, and the road wound aimlessly about, following no definite direction or topography. We guessed various valleys in succession, and each time the trail turned another way. We were in a Wyoming desert on the Indian Reservation S. of Dubois. Clumps of sagebrush peppered the hillocks, and no living thing was in sight. We had been told that Hidden Valley Ranch could not be seen from the highway. I was beginning to wonder whether it could be seen from anywhere.

Ten miles later someone pointed out horsemen ascending a ridge ahead of us, indifferent to our approach. We had reached an altitude of 7000 ft. Surmounting the next hill we saw the foot of a hitherto unseen valley, divided at the bottom by an irregular column of green trees. On the near side of the trees several low buildings and a fence could be seen. Perhaps this was Hidden Valley Ranch.

A cowboy in bright dress clothes gave us a friendly greeting, and showed us to the ranchhouse. Mrs. Presgrove left the kitchen to welcome us. A pair of marmots in a wire pen along the side of the porch gnawed noisily at a short log. A big cat ran between Charlie's legs. A dog rushed belligerently forward, but quietly subsided when Dorothy made a friendly gesture. On the lawn a lamb ba-aa-ed as a goose squawked past him. A fair-haired four-year-old girl dashed onto the porch, but quickly retired behind her mother's skirt. A horse whinnied, and the thud of rushing hoofs passed outside.

Mrs. Presgrove agreed to furnish pack and saddle horses for the trip to the upper fork of the Dinwoody, near the foot of Dinwoody Glacier. It was 22 miles away, and being already mid-afternoon, with no water en route, we would start early on the

morrow so as to make the trip in one day. The ranch could supply us with butter, and we had enough dry food for a six-day trip. Presently a fast rider came down the valley on a beautiful Palomino. Lean and wiry, the rider dismounted at the corral, and, with a friendly smile, whipped off saddle and briddle. He proved to be Don Presgrove, owner of the ranch.

After sorting and packing our duffel for the trip, we rode 2 miles up Dry Creek Valley to the falls, almost hidden in a narrow cave-like gorge. Miles beyond, above the head of the valley, Chimney Rock stood up above the ridge like a thumb, sharply silhouetted against the sunset sky. There was time before supper for a cool dip in the glacier-fed creek, in a pool hidden by the trees. The sunset indicated fair weather ahead. Henry Coulter and Charles Webb slept in the station wagon, while my wife and I took an unfurnished cabin for the night.

Breakfast consisted mainly of sourdough pancakes and milk. Our horses were packed and saddled by seven, and we were off. The trail climbed rapidly up the ridge on the N. side of the valley to a desert plateau. A pretty stream slanted down the ridge on the far side of the valley, broken by a waterfall. After several miles we reached the waterhole where several cowhands were "cutting out" cattle. Some of our party joined in the fun. A wild herd of horses was driven down from the ridge, and along the trail ahead of us into woods, to a meadow. As the forest thinned out rocky summits appeared on the ridge above and ahead of us. The long high ridge on the opposite side of Dry Creek Valley was broken by a narrow canyon with precipitous walls. As we climbed, our ridge flattened and became bare and rocky. The sounds of sheep on the march floated over to us, and hundreds of them could be seen across the flat, appearing to flow ahead of the herder and his dog. Gradually we reached the top of Scenic Pass, at 10,000 ft. on Horse Ridge. The splendid panorama of the highest and wildest of the Wind River Mountains lay ahead of us, crowned by Gannett at the head of Dinwoody Canyon. This was to me one of the most impressive scenes in our great West.

After lunching at the pass we descended the right flank of Horse Ridge to timber, and the Ink Wells, three small dark lakes on a shelf of Dinwoody Canyon. There was a fishing camp at one of the lakes, but when the Federal Government wisely designated this a wilderness area, all the cabins had to be replaced with tents.

Descending further, we came to the switchbacks, and face upon the upper canyon. The E. face of Gannett appeared almost vertical, half hidden by snow and ice. There appeared to be no way up this face, but we were to learn how deceiving such an impression can be. Dinwoody Creek was high and turbid with melted snow. The creek was forded on horseback, and we rode on with legs wet.

Floyd Wilson welcomed us at his camp, and we decided to stop there for the night. The mosquitoes and horse flies were not too bad—but bad enough. After supper we discussed plans for the morrow. I had climbed in the Wind Rivers from Titcomb Lakes region four years previously with the Appalachian Club. Coulter and Webb had not previously visited the mountains, nor had any glacier experience. Gannett and Theodore Koven were both clearly visible from camp, and equally appealing. Floyd told us that Gannett might have been climbed once from the N., and that Koven, a much smaller peak, was credited with one ascent. We agreed to ascend Gannett Glacier and inspect both.

As we arose the moon was setting over Koven, and soon the first red glow of sunrise bathed its summit. Following Dinwoody Creek to the fork, we forded the S. branch and crossed a shoulder of Sentinel Peak to the snout of Gannett Glacier. Webb discovered the snout to be much steeper than it looked. He stepped cautiously onto the ice with an expression of awe. He soon became alarmed at the rumblings of subglacial streams, and at the cracks in the ice. His look of amazement at the first large crevasse was a delight. The vision of this crevasse must have recurred to him when we reached the snow, for only the rope, and following in my footsteps, reassured him. Skirting the larger crevasses, we reached the col between the two peaks without difficulty and again studied various possible routes. Koven appeared to be a straight rock climb, and we were looking for snow and ice. The N. ridge of Gannett was separated from the glacier by a large randkluft and the wall above the cleft was ice—polished and quite steep. The snow slope leading up to a col between the N. ridge and the summit was less inclined than it had first appeared, but there were two large bergschrunds. The lower was a continuation of the randkluft from the N. ridge. Fifty feet above it, from the N. E. face of the summit peak a second bergschrund overlapped the first. It appeared that we might be able to angle up between them. Charlie's remarks as we swung around the first bergschrund were

PINNACLE AND GANNETT FROM TURRET

GANNETT FROM GANNETT GLACIER

Photos, B. Howorth

SPHINX FROM DINWOODY GLACIER

TURRET FROM DINWOODY GLACIER

Photos, B. Howorth

Photos, B. Howorth

stimulating but not encouraging. The crack yawned beneath us as we slowly worked our way upward, while the wall above seemed to overhang us. Hank climbed quietly, but Charlie was plainly worried.

Reaching the rock of the N. ridge we stopped for lunch. The saddle was reached by way of the loose rock along the N. edge of the snow couloir. We could look down the great cliffs of the W. face to the glacier. Climbing directly up the rocks of the N. ridge we soon reached the summit. The air was clear with a visibility of a hundred miles. The Tetons stood out clearly on the N. W. horizon, with the Gros Ventre Mountains nearer at hand. Sprawling Downs Mountain lay to the N., and Mammoth Glacier spread out far below us. We were standing on the highest point of the Continental Divide in Wyoming with a watershed to an ocean on either hand.

After a second lunch we decided to traverse the mountain, and walked down the S. ridge to its junction with the S. E. ridge and the regular route. We continued on the S. ridge to the large tower, below which lies the col connecting Gannett with Pinnacle Ridge. Ken Henderson had led our 1936 party up a couloir of this tower. I missed the couloir, so we descended the tower by a spiral route around the W. and S. to a long chimney on its E. face leading eventually down to the col. The descent of this tower was the most interesting part of the day's climb. The route of ascent seemed to be the best route up the mountain provided the snow couloir and bergschrunds are in good condition. The first 100 ft. below the col was iced and awkward, and the scree frozen and sharp, but we soon reached Dinwoody Glacier, which we descended and crossed to its opposite lateral moraine. An easy walk along the right bank of Dinwoody Creek brought us back to camp.

During this descent the peaks in the great cirque around Dinwoody Glacier had been inspected, and Woodrow Wilson was chosen as our next goal. On the next afternoon we moved camp about a mile up the S. fork to timberline at 10,500 ft. Early the following morning we walked up to the glacier. Here Charlie developed mountain sickness and turned back. Hank and I took the Woodrow Wilson prong of Dinwoody Glacier, skirting the larger crevasses, and crossing others on the snow. The bergschrund was snow-covered near its middle, which we crossed. Snow extended well up toward the summit of Wilson on this the

N. side. At the saddle where the snow ended, we suddenly faced the Sphinx, seemingly almost within reach. The huge overhanging bergschrund crossing its N. face was most impressive. We were surprised to find a sharp notch in the ridge above the snow, and upon reaching its bottom, we turned the opposing wall to the right and ascended the couloir to the summit. Here we found the records of three previous ascents. Heading the Titcomb Valley cirque, with Helen and Frémont on the E., G-15 and the Titcomb Needles on the W., and Gannett to the N., the view from Wilson is one of the finest in the region. After a pleasant hour on the summit we climbed back to the snow, and glissaded down the snow-covered part of the glacier. As we walked over the glacier and along the S. fork, large, loose clouds began to form along the summits, and there was a beautiful play of light from the late afternoon sun in the clouds. The warm red glow of the sunset on several peaks was visible from camp. Webb was in much better spirits, and ready to climb again on the morrow.

Our next choice lay beween the Sphinx and Turret. We had with us no record of previous ascents, and most of the peaks were not designated on the topographic maps, so we chose on the basis of our observations in the field. We were not even sure of the names of the mountains. Floyd thought the Sphinx had been climbed once, with difficulty. It was very close to Wilson, lower, with less extensive views and opportunity for photography; the high twin towers of Turret, with a vertical wall on the N. tower, suggested the possibility of an interesting rock climb. So Turret it would be.

Again, clear weather, and an easy walk on the open glacier to the foot of the scree couloir on the N. ridge of Turret. The scree was loose so we traversed to the buttress on its right, where we found an easy continuous rock climb to the saddle, from which there was an interesting view of the Bull Lake Creek Canyon. Traversing to the E. some 200 ft., we entered a steep chimney leading up to a notch between a small subsidiary peak, and the N. tower. The N. face of this tower appeared difficult. At the notch, the remainder of the route was clear. A broad couloir, extending up the W. face of the mountains, divided the two towers. Traversing diagonally upward under the N. tower, the couloir was reached, and through it the higher S. tower. Hank and Charlie, in search of rock climbing, and accustomed to New England

granite, were disappointed at the broken loose rock, requiring constant vigilance, and the lack of continuous technical difficulty. The summit was about 6 ft. in diameter, with views in every direction. We found a tiny can, with the names of Effingham and Blaurock, 1926, and the legend, "Climbed by mistake for Harding Peak; going down now to climb Harding." I have since learned that the peak was subsequently traversed by Underhill and Henderson. There was a fine view of the precipitous E. face of Frémont with its huge underlying snowfield broken by a long bergschrund, of Sacagawca, and the long E. ridge of Helen ending at the summit tower. I have seen no better view of Gannett, with the three great prongs of Dinwoody Glacier. Far to the E. arose in billows the dense smoke of a forest fire, while 2 miles away Chimney Rock stood out above the rim of Horse Ridge.

Returning by the same route to the col, the scree proved too coarse and sharp for glissading, and too loose for comfort. This was the most disagreeable scree I have ever encountered, and I soon wished we had climbed back down the ridge. Just below the foot of the glacier is a clear, quiet pool with a big snow bank at one end, and Charlie and I could not resist a swim.

At camp there was just enough food left for the next two meals, and as this region was free of insects, we stopped again for the night. There was no one at Floyd's camp the next morning, but we expected Don with the horses in the afternoon. They arrived in due time, with a new food supply, with which we feasted that night. I wanted to see Chimney Rock and walk out along Horse Ridge to Scenic Pass. Next morning the others rode down the trail, planning to fish at the Inkwells, while I climbed up to Horse Ridge by the couloir back of Floyd's camp. Again there were fine views, far and near. I followed the rim of Dinwoody Canyon to the unnamed lake in the glacial basin at the head of Horse Ridge, then circled the glacier to the summit of the ridge at 13,400 ft. Chimney Rock was now in view to the E., a vertical column connected to the ridge by a knife-edge. Storm clouds were appearing toward the W.

Chimney Rock was most tempting. The vertical column appeared to be at least 1000 ft. high, standing off 100 ft. from Horse Ridge, and 60 ft. above it. The effect was accentuated by a deep couloir on either side of the ridge. The top ridge of the chimney was flat and polished smooth, and sloped steeply toward the main

ridge. It was split down the middle by an irregular crack about 6 ft. wide. A narrow jagged knife-edge of some 10 yds. long connected the Rock with the main ridge. I could see no evidence that the Rock had been climbed. No rock-climber could pass up such a temptation easily. But alone, with no rope, no light shoes, and a strong, gusty wind coming from the storm in the W., the temptation had be resisted.

The walk to Scenic Pass was a long one, but along the skyline, and the continually changing panorama, with the approaching storm, caused one to forget to be tired. The wind increased, and soon a driving mixture of rain, sleet, and snow was blown across the ridge. The storm was at its height as I crossed the summit above the pass. In the basin below a huge mass of sheep, running ahead of the storm, suddenly swung sharply to the left for no apparent reason, and raced up the gentle slope. The sheep herder's tent was warm and dry, and smelled of fresh mutton. Floyd was there, and he told me that my party had just gone over the pass to seek shelter from the storm. The main range of the mountains was now completely hidden in the boiling clouds, and on the opposite side of Dinwoody Canyon scud clouds blew in and out of gullies and couloirs, and swirled around the various peaks, breaking and reforming, while rain poured into the canyon.

I had hoped to find the horses over the pass, as the storm had not crossed it, but they had gone on. I had walked 15 miles, and the ranch was still a dozen miles away. Dry Creek Canyon now came into view, clear and quiet in contrast with Dinwoody. As I reached the open forest, the alpenglow began to light up the trees, and the play of soft lights and shadows, and color, was beautiful. But it would soon be dark. There was light as far as the water hole. I thought of bivouacking there, but decided to go on. It seemed simpler and safer to drop down into the canyon and follow the stream. A small herd of cattle in one of the many gullies eyed me suspiciously, then wheeled and dashed heavily away. Before I reached the stream the night was black, and it was difficult to distinguish sage from prickles and cactus—soon enough. The ground was rough, but not to be compared with a boulder slope after dark. The trees along the creek were dense in places, and it was necessary to climb out into the desert again. A vague horse trail was helpful when it could be found. Soon a light, which must come from the ranch, appeared, possibly a hundred yards,

possibly a mile away. Only one more obstacle, the irrigation ditches, well hidden in grain waist high. For one long moment I became the obstacle—wet to the thighs.

Charlie and Hank returned to the Tetons next day. My wife and I spent three days on horseback exploring "sinks," Indian burial-grounds and the homes of vanished tribes, lower Dinwoody Canyon with its Indian writings, and its huge Indian cave carved first by the stream as a natural aqueduct. Sonny, aged nine, led us to a hawk's nest in a hollow tree, killed a rattler in the desert, and showed us what it means to be brought up in the saddle. At sunset every hillock of the Wind River Valley and every distant range stood out clearly in the eerie light. And so ended our Wind River excursion.

The West Face of the Grand Teton

HENRY COULTER

ROBERT UNDERHILL once stated in a lecture that the chimney up the West Face of the Grand Teton presented the most obvious and direct route to the summit. When asked if he intended to climb this route, Underhill replied that he would leave it to some of the younger climbers. The matter seemed to end there, until this summer, after having examined the face from every possible angle, Jack Durrance decided that it was time the route was attempted.

Since one party, led by Charles Webb of the D. M. C., had traversed into the upper part of the West Face chimney from the Owen route and had been turned back by icy rocks, it was deemed advisable to wait until better conditions could be expected. Accordingly on August 13th, a party of seven started up Cascade Canyon and established a camp in the basin between the West Ridge of the Grand Teton and Mt. Owen. This basin, I might add, was in the opinion of all the most beautiful and impressive of any high altitude camp in the Tetons, and, since it was unnamed, it was unanimously decided to call it Valhalla Canyon.

The entire West Face of the Grand Teton was visible from our camp, and an examination of the proposed route was made with field-glasses. The first problem obviously was to reach a very pronounced ledge which ran along the base of the summit massif about 1000 ft. below the top, and appeared to lead into the lower part of the West Face chimney. Immediately above this ledge the rock seemed to present no particular difficulties. Higher up, however, in the chimney proper, we could see a long, overhanging pitch which doubtlessly would be the key-point of the climb. Leading to the ledge were three characteristic bands of black rock. The third seemed to lead into the Enclosure ledge. Our plan was to gain the first band, work our way through it to the second, and traverse from the second to the third and hence onto the ledge.

That evening clouds began to drift in from the S. W., but it was decided that Durrance and I should start the next morning, carrying our packs as high as possible, and, if the weather continued unfavorable, leaving them for another attempt the following day.

At 3.30 the next morning the sky was still cloudy, and I was all for staying in bed, but Jack promptly vetoed that idea. By 4.00

we were crossing the scree slope which leads to the couloir coming down from Gunsight Notch. After following the couloir for several hundred feet, we traversed to the right, and climbed a wall onto the lowest isolated rock pinnacle. Here we stopped to build a cairn, and were treated to a beautiful view of the five finger-towers of the West Ridge, caught by the first rays of the sun.

From the cairn the route led up a series of slabs and débris-covered slopes to the bottom of a steep 100-ft. pitch which led to the first band. Roping up, Jack climbed this, and I followed with a little difficulty in the middle where a large loose block threatened to pull out. Throughout this portion of the climb we noticed a great many white spots made by rock falls from above. Both of us were uneasy since the signs were so numerous. We climbed as fast as possible and, fortunately, no rocks came down.

We started the climb straight up the first black band, but luckily found a traverse which led to the right over some broken rock and saved us considerable hard work and time. At one point some ice fell from above, narrowly missing Jack, and flying over my head with a nasty whine. We raced up the last slabs just in time to shelter ourselves in a protected spot from a snow storm which had blown in from the S. W.

The next twenty minutes were spent tied to a piton under the bivouac sack. Needless to say, the accommodations were not very comfortable. When the sky cleared we debated whether it would be wise to continue, and finally decided at least to try to make ledge No. 2 before turning back.

At this point it was necessary to climb a steep pitch to the right in order to gain the second band. This pitch was the most difficult yet encountered, and two pitons were used in climbing it.

Continuing straight up over a series of slabs, scree patches, and an ice field, we made a traverse to the left, and back into a group of large boulders in the upper part of the second black band, where a stop for lunch was made. One more rope length led to the opening of an extremely rotten chimney which turned right to lead to the critical ledge communicating with the West Face chimney. Once up the rotten chimney, in which there was one overhang of very loose red flakes, we traversed along a ledge for about 200 ft.

Our position was then about 500 ft. below the Enclosure, just above the snow field which can be seen by looking straight down the face from the crawl on the Owen route. Here we began to

discover how wrong our observations from below had been. This portion which had looked relatively easy was actually a blank wall which seemed to overhang along its entire breadth, rather than laying back as it had appeared to do in the foreshortened view from below. Several minutes' search produced nothing but a badly battered hat which our friend Charlie Webb had dropped off the Enclosure several weeks before. Finally a crack was found on the extreme right-hand edge of the wall. It was not at all promising for the first 50 ft., and beyond that we could not see, but we decided to give it a try. It was 12 o'clock and about 1000 ft. remained to be climbed. To have to turn back would have meant a retreat through dangerous territory, and many rappels.

This first pitch started from a large upright flake and continued up a slightly overhanging crack to a small ledge about 50 ft. above. Instead of easier climbing above, the severity increased. Three pitons were used, and it was necessary to pull the rucksacks up on the rope. From here Durrance led up another 80 ft., traversing slightly to the left around an overhang which would have been extremely dangerous to lead. The next pitch also presented an overhanging crack which Jack traversed to the right, this time over a rather smooth plate. Several pitons were used for belays on these pitches, but at no time on the climb was direct aid used for the leader. Above the third vertical pitch the route levelled out slightly. I wasted about half an hour trying to get onto the ledge with the packs, but eventually had to throw them up and climb after. We crossed a large open slope which was covered with fragments knocked down from the Owen route above. Under some protective boulders we ate a second lunch in comparative peace, for we knew if we should need to retreat we could traverse out to the Upper Saddle. On this slope we found two more hats, bringing our collection to three. Unfortunately two of these were lost again a little farther on. The true chimney starts just above this point, and we were greeted at its entrance by a terrific bombardment of stones knocked down from above. Undoubtedly the party climbing overhead on the Owen route was unaware that anyone was down on the West Face below them, but the hail that went up quickly straightened that point out, and no more stones were dropped. As a matter of fact, it is rather surprising that our language didn't start an avalanche.

Three difficult pitches straight up the left wall of the chimney brought us to a ledge which looked very much like the end of our

climb. This was the key point seen from below, and although it was not actually overhanging, it was very steep with no possible piton cracks for at least 100 ft., and there was a regular waterfall cascading down the rocks. By this time the combination of the heavy loads and the afternoon sun had pretty well exhausted me, and Durrance turning to see if I was ready to belay him, heard a loud snore and saw me peacefully sleeping on a 2-foot ledge. I was quickly restored by a tirade of highly abusive language.

Pacing back and forth along this ledge, my companion announced that he would give it another try before preparing for a bivouac. Everything except rope, pitons, and camera were left behind on the ledge, rucksacks having never been intended for the sort of climbing that in all probability lay ahead of us. Jack, after a final search, traversed about 140 ft. out to the left of the chimney, up a 10-ft. overhang, and back to the right on a terrifying smooth slab. He then traversed along the top of this slab to a corner around which he could not see. At this point Bob Bates appeared above us on the Owen route. He could see the traverse that we would have to make to reach the chimney, and, after critical inspection, he decided that it might go. I went up to the top of the plate where Jack was standing and got ready to belay him. The traverse proved to be as delicate as it looked to Bob from above, since it was extremely steep and smooth with only the smallest fingerholds and practically no footholds at all. Several pitons were used on the first part, but the last 20 ft. had no suitable cracks. This proved to be the last difficult pitch on the route.

At 7.30 in the afternoon we were even with the crawl of the Owen route, with only half an hour of daylight left in which we might reach the top. Staying roped, we raced up the final portion of the chimney, remaining on the left hand wall to avoid ice except in one place where it was necessary to traverse around an icy overhang. The summit was reached at five minutes after eight, just as darkness came.

The descent to the D. M. C. camp on the floor of Garnet Canyon was made by moonlight in four hours, making a total of twenty-four hours for the entire trip.

Several notes might be of interest. Complete bivouac equipment was carried on the climb. It consisted of a bivouac sack, two light sleeping-bags, Primus stove, pot, canteen, extra food, and rain capes. In addition, one pair of nailed boots and an ice-axe were carried, but neither were used. The total load including

pitons, camera, hammers, etc., weighed about 50 lbs. Luckily most of the equipment was not needed, but I do not believe that it would ever be safe to attempt a climb of such length, where the possibilities of a hasty retreat are non-existent, without being fully prepared for any eventuality which would prevent completion in one day.

The packs which were left on the ledge below the Owen route were collected a week later by Judy Peterson who rappeled down. First the sacks were hauled up, and then Judy climbed straight up the chimney with a direct belay from above.

Durrance rates the West Face as the most difficult climb he has done in the Tetons, its nearest rival being the North Face of the Grand. In comparing the two, he considers that the North Face contains only about one-third as much of the very difficult grade of climbing found on the West Face, although the West is less exposed to rock fall than the North.

I can hardly recommend the West Face as a pleasant trip for those who are planning to climb in the Tetons; however, several of our other "firsts" which are not as yet included in any guidebook might be of interest. The North Face of Nez Percé is a relatively short climb and one of the most enjoyable in the range. The route is very direct with several steep pitches just below the summit made interesting by about 2000 ft. of exposure. The rock is very good, fracturing into excellent holds throughout. Descent via the East Ridge is more difficult than the traditional West Ridge route, presenting one very rotten pitch up the second gendarme.

On the Grand, the true Southwest Ridge to the Enclosure, which we did with Fred Ayres, is a longer and more varied climb than the Exum route. It presents excellent route-finding problems, and many easy lines of retreat in case bad weather should be encountered. Both the Dike and the South Ridge of the Middle are very interesting climbing. The first tower of the South Ridge contains several sixth degree pitches which can be very easily avoided by traversing into the ridge from the gully on the W. The Dike must be climbed very carefully to avoid numerous loose blocks, and can be followed only to the Dike Pinnacle. All of these climbs should prove enjoyable to those who wish to escape from the more frequently travelled Teton routes.

W. FACE OF GRAND TETON FROM VALHALLA CANYON

DURRANCE CLIMBING ON THE W. FACE

Photos, H. Coulter

TRAVERSE OF LONE EAGLE

Photo, R. M. Ormes

The North Face of Lone Eagle

ROBERT M. ORMES

LONE EAGLE PEAK, formerly called Lindbergh, lies in the head of a valley above Monarch Lake, near Granby, Colo. It is a curiosity among mountains, for though unquestionably one of the most imposing peaks in the state, it is only the end point of a ridge which splits the cirque in two. The ordinary route, pioneered by Carl Blaurock in the '20s, takes the climber *down* to the peak from behind, and has for its most interesting feature a ridge which narrows to wrist width for several yards.

It is the N. view, from the turn in Cascade Creek, which makes of this ridge a separate peak, shaped like a narrow dome with a magnificent spire on the summit.

I have not been able to ascertain the history of N. face attempts; I only know that everyone who has visited the valley has kept on talking about the N. cliffs long afterward. There are numerous long rock walls surmounted by enticing spires and gendarmes around the walls of the double cirque, but this tower in the foreground is the climb that fairly shouts its challenge at the onlooker.

Roy Murcheson of the Colorado Mountain Club spent the week of July 20th in the Club camp under the peak as director of a "school of mountaineering," for Juniors. He had planned an attempt on the N. face as a finale for the climbing schedule, and had lured Carl Blaurock, Elwin Arps and me into the valley for the purpose of assisting him.

We spent our first afternoon in and near camp with the glasses, reading our way along various ledges and up through this and that crack. We stuck every time about 300 ft. below the summit, where the face narrowed into an overhanging nose. Blaurock pretended to see something of a corner climb possibility at the back of this nose where it joined the W. face, or right hand cheek; but the prospect was far from hopeful. The top 150 ft., above the bridge of the nose, looked as though it would go.

Since there was a day to spare, I went scouting with Rit Burrows, a Junior, so as to iron out as many of the questions of routing as possible. We headed up a timbered ridge into the N. end of the mountain, passed through a little steep rock and scrambled up a scree track to the lower end of a long grass ledge which ran around to the W. on the N. W. flank of the dome. We rose a little on this ledge, and the cliff deepened under it, so that we

soon had the feeling of being on the mountain. The going was easy, but far from dull, since it was both exposed and narrow. In one spot the thicket of dwarf spruce was so dense that we amused ourselves by walking on the tree tops, such as they were.

Since our next move was to climb out to a higher and much wider grass ledge above this one, we selected a slanting crack well around under the W. side of the summit. We had worked hard and forced our way up by means of some rather curious combinations in footing when I discovered that I had been too casual and brought no hammer to go with the pitons. We should have wanted a supplementary anchor or two to go over the top. After an hour or two of backing and filling we gave it up and returned to the ledge.

We were already pretty far around the mountain for a N. face climb, and so backtracked to investigate another crack we had seen. It was a steep trough filled with huckleberry plants. Fortunately it was quite dry, and we worked our way up with little difficulty to the higher shelf or shoulder of the dome.

How to pass the nose was still the question, and we walked around to the N. end to have a look at the E. side. No hope. It was cut off from us by a wide overhanging section under the nose, and looked very thin even above that. Nor could we mount the nose itself. There was only the chance that Blaurock's corner climb would go, and I believed that would overhang at the top. We scrambled up easy rock on this N. crest, came to the side of the nose, and looked into the corner.

The more we saw, the better it looked. There would be a traverse along the side of the nose, which though steep was promisingly bumpy, and then the corner climb. It had just what was necessary—a crack or two which had not been at all visible from the lake.

We wanted to see into the crack before returning, and so used rock fragments to drive the first piton of the traverse, but the pieces broke in our hands at the first blow. We knew that the final 150 ft. of the climb, the part above the nose bridge, could be circumvented by a ledge on the E. side if necessary, and that a short 100 ft. now separated us from this platform. Whether we could make that, and then stay on the N. edge for the final pitch, were questions for tomorrow.

In our consultation at the lake that night, it seemed that the climb would not prove too severe for a large party, and accordingly

four wistful-looking Juniors were invited to participate in the kill. Thus there were eight of us who assembled the next morning for raisins and chocolate on the upper grass slope.

Roy Murcheson stepped out on the traverse, hammered at my piton a little, then stepped far across to a flake. With his feet far apart, and the rock face almost pushing him in the nose, he sank another piton which went deeper and gave him satisfactory anchorage for the short catwalk. It was necessary for him to duck under a bulging section of the wall before he made the crack. Then he disappeared behind the bulge, moved up the crack and came out again on a flat rock above the traverse. This table was most convenient, as it afforded an excellent anchoring position for the subsequent climbers and also a good ferrying station for the knapsacks, which could not be carried across the traverse. Blaurock crossed second, and while Roy worked the knapsacks and the rest of the party over, he climbed higher in the crack. There was only one place which slowed him: he drove a piton in order to be anchored while he drew himself tenderly up over a chest-high overhang.

By way of variety, Arps and I accepted a rope from above, and instead of using the traverse, started up the crack from its bottom on the grass shelf 40 ft. below. We found that we could use a shinnying technique up the flake edge which formed one lip of the crack, and that while this route is more strenuous than the traverse, it obviates the need for pitons.

On the bridge of the nose we met Dudley Smith, who had come up the ordinary way and down the E. side ledge to see the fun. When we had rested a few minutes on his platform, we took to a shallow chimney series which led off it, this time just E. of the extreme N. edge, and thus stretched the good climbing all the way to the top.

The presence of static hurried us off the summit, and we were just nicely off the rocks before they were wet by a furious cascade of snow pellets.

This climb is reported for Alpine Club members not because of its difficulty, which is nowhere extreme, but because it affords a maximum of pleasure for the climbing enthusiast. There is enough in quantity, in quality, and in variety to make a splendid day, and the climax, as it should be in any thriller, is near the top. Furthermore the climb is exceptionally free of rotten rock and tedious scree. It ranks as tops, along with the Ellingwood arête on Crestone Needle.

The First Mountain Ascent in North America

Orrin H. Bonney

THREE and a half centuries before Whymper made the first climb of the Matterhorn and four of his companions slipped to their death; and more than 250 years before Dr. Paccard ascended Mont Blanc—here in the new world the bold and daring Spanish Conquistadores climbed the fifth highest peak of the North American continent—Popocatepetl—towering 17,888 ft. in altitude. They did it without crampons or ice-axes, and while Popo was in the most violent eruption it has had in the last four centuries.

What led them to make the ascent? Well, the first attempt was for the same reason that leads you and every mountain climber to make an ascent and was just about as abstract to explain. A spirit of adventure, curiosity, a desire for accomplishment, and the statements of the Indians that "It can't be climbed" were all part of the motives that led to the climb. Later, when the crater of the peak was successfully attained, there was the additional motive of obtaining sulphur, a necessary ingredient for their gunpowder.

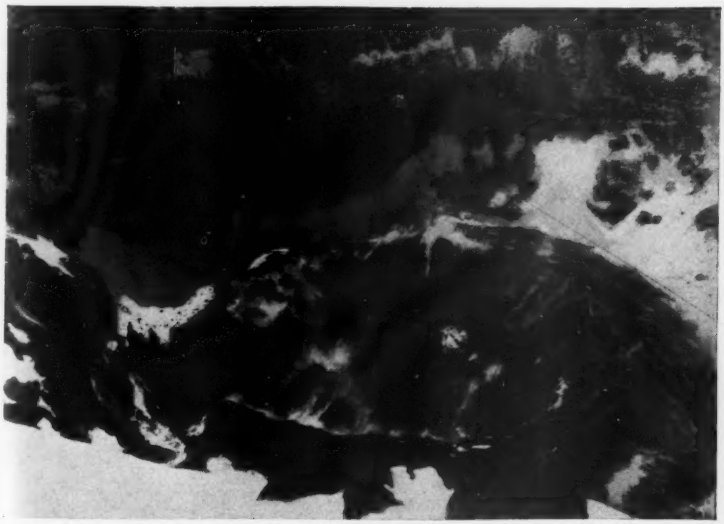
Bold adventure was not strange to these conquistadores. Cortez landed near the present site of Vera Cruz, March 4th, 1519, with "fifteen horsemen and three hundred foot as well accoutred for war as my resources and the short space of time would permit" and conquered a nation of hundreds of thousands. When the Spaniards arrived at Cholula in October, 1519, Popocateptl was in eruption. This was an evil omen to the Indians, whose tradition had it that the noise and fumes were caused by the agonies of tyrants who there underwent purification before they could enter final rest.

Cortez, wishing to show the Indians that no achievement was above the dauntless daring of his followers and desiring to satisfy his curiosity as to the "secret of this smoke," sent Diego Ordaz with nine Spaniards and several Tlascalan Indians to undertake the ascent. In his letter to Charles the Fifth, King of Spain, on October 30th, 1520, Cortez states:

> * * * Eight leagues from this city of Cholula there are two marvelously high mountains whose summits still at the end of

THE SUMMIT OF IXTACCIHUATL

Ascent is usually made along the prominent snow ridge, which has been rather beautifully named "Ariste de Luz," the English equivalent of which would be "Necklace of Light." Snow falls on these peaks in the late spring and summer; late fall and winter are the best climbing months



THE CRATER OF POPOCATEPETL

As viewed from El Pico Mayor showing the inner cone with the steaming vents and the snow-covered sides of the main crater. The inner cone is filled with a lake of sulphurous water with a temperature equal to the boiling point. The sides of the main crater are about 1500 ft. and nearly perpendicular

Photos, O. H. Bonney

THE ICE CLIFFS AT THE SUMMIT OF IXTACCIHUATL

It is the writer's opinion that Ixti had a crater larger than Popo, which grew cold and filled with snow, now represented by these ice layers expanding upward to form these unusual cliffs

THE INTERIOR RIM OF THE CRATER

Showing, at the right, the place where Montaño was lowered into the crater. Old successive flows of lava and El Pico Mayor appear in the background

Photos, O. H. Bonney

August are covered with snow so that nothing else can be seen of them. From the higher of the two both by day and by night a great volume of smoke comes forth and rises up into the clouds as straight as a staff, with such force that although a very violent wind continuously blows over the mountain range, yet it cannot change the direction of the column. Since I have ever been desirous of sending your Majesty a very particular account of everything that I met with in this land, I was eager to know the secret of this which seemed to me not a little marvelous, and accordingly I sent ten men such as were well fitted for the expedition with certain natives to guide them to find out the secret of the smoke, where and how it arose. These men set out and made every effort to climb to the summit but without success on account of the thickness of the snow, the repeated windstorms in which ashes from the volcano were blown in their faces, and also the great severity of the temperature, but they reached very near the top, so near in fact that being there when the smoke began to rush out, they reported it did so with such noise and violence that the whole mountain seemed like to fall down: thereupon they descended, bringing a quantity of snow and icicles for us to see, which seemed a novelty indeed, it being so hot everywhere in these parts according to the opinion of explorers up to now: especially since this land is said to be in the twentieth degree of latitude where great heat is always found. On their way to this mountain, as it happened, they came across a road * * * it led to Culua, and * * * it was a good road * * *.

two days after leaving Cholula we climbed the pass between the two mountains which I have already described, from which we could discern the province of Chalco belonging to Muteczuma * * *.

Early the next day I struck camp for a town two leagues further on called Amecameca, capital of the province of Chalco, which must number more than twenty thousand people, including the villages for some two miles around it. In this town we lodged in some excellent dwellings belonging to the chief ruler of the place * * *.

All historians do not agree with Cortez as to the lack of success of the first party. *Gomara*[1] and *Bernal Diaz* give credit to Ordaz

[1] According to the account of *Gomara*, the entire party of Ordaz and nine others proceeded to the mountain. They had climbed a short distance to the cooler region when the quaking ground and raining ashes caused the party to halt. Ordaz and two of his men continued, scrambling with some difficulty over the stones, boulders and frozen sand which fringed the snow line. At one time during a bombardment of ashes and heated stones the party was obliged to seek shelter for about an hour, after which they continued their climb turning past the projecting rock now known as Pico del

Photos, O. H. Bonney

Old successive flows of lava and El Pico Mayor appear in the background

crater.

which grew cold and filled with snow, now represented by these ice layers expanding upward to form these unusual cliffs

for having made the first ascent. Since Ordaz had been a bitter opponent of Cortez, and since Cortez was somewhat wont to play down some of the exploits of his contemporaries so as not to detract attention from himself, it is quite possible he did not give Ordaz full credit. At any rate the King of Spain recognized the achievement of Ordaz as successful and allowed the family of Ordaz to commemorate the exploit by assuming a figure of the burning mountain on their escutcheon.

On July 2nd, 1939, La Legión Alpina of Mexico City erected a plaque on the summit of Popo commemorating the exploits of the Conquistadores and giving credit to Diego de Ordaz for the first ascent and to Francisco Montaño for the first descent into the crater.

The exploit of Francisco Montaño was truly spectacular, and was authenticated by every historian of his age and indeed takes its place in mountain climbing records.

Over two years after his first letter, Cortez, on May 15th, 1522, again wrote the King of Spain speaking of the success of Montaño's climb:

> I informed your Majesty in my previous letter that close to the provinces of Tlascala and Guajucingo there is a circular very lofty peak from whose summit a continuous stream of smoke arises as straight as an arrow into the air. The Indians gave us to understand that it was a very evil place and that they would die if they ascended there. I accordingly dispatched certain Spaniards to climb the mountain and examine its upper slopes. At the time of their ascent the smoke was being ejected with such a rumble that they neither dared nor could arrive at the mouth of the crater; and later I sent other Spaniards who twice climbed right up to the mouth of the crater from which the smoke emerges; they found it measured some two bowshots across and some three-quarters of a league in circumference; it was so deep that they could not see the bottom of it; they found, however, a certain amount of sulphur lying nearby, which is expelled by the force of the smoke. On one occasion while they were there they heard a great rumbling noise and made haste to descend, but before they were half

Fraile, near which they almost lost themselves in the ash-covered snow and finally succeeded in reaching the summit. The crater was nearly half a league in width though not deep, and presented the appearance of a caldron of boiling glass, as says Gomara. After securing some ice and snow as trophies, the men returned as fast as possible, and were received by the natives with great exultation and admiration, the Indians regarding the deed as something superhuman.

way down an infinite number of stones began to rain down on them which put them in no slight danger. The Indians considered it a great enterprise to go where the Spaniards did.

On October 15th, 1524, when Cortez wrote the King his fourth letter, in telling him how the conquerors had managed to provide themselves with cannon and gunpowder, he stated:

> As for sulphur, I have already described to your Majesty the mountain in this province from which rises a great column of smoke. A Spaniard was let down into the crater some seventy or eighty furlongs on the end of a rope, and succeeded in gathering sufficient for our needs up to the present: in the future this method of procuring it will be unnecessary: it is certainly dangerous and I am continually writing to Spain to provide us: * * *.

The other historians give us other details. Francisco Montaño and four others set out for the mountains amid great acclaim. As they approached the volcano their train had swelled to thousands of sightseers, filled with excitement about this assault upon the infernal regions, which promised to be far more daring than the first. Many built huts or lean-tos near the foot of the mountain to watch and await the outcome.

The ascent began about noon. Indian porters carried ropes, bags and blankets hung across their backs and secured by tumplines across their foreheads—the most ancient back-packing device of the Americas. When night came, the climbers, high on the slope, dug out a cavity to shelter themselves from the cold, but the sulphur fumes drove them out, and they stood around shivering in the dark. Clouds and smoke obscured the starry sky. As they moved around in an effort to keep warm, one of the Spaniards fell into a crevasse. He managed to catch himself on a huge icicle and the rest of the party got him out. Thereafter they stayed closer together.

At dawn the party started upward again. In half an hour an eruption shook the mountain and sent the party scampering for shelter of a few rocks. The blast was not without its compensation, however, for a heated stone was thrown out and rolled down to them, and around it they gathered and warmed themselves. (Climbers today will not find the mountain so accommodating.) After stopping, one of the party was too exhausted to proceed and he was left there until the return trip.

As the party neared the rim of the crater, another eruption took place and sent the party on a fruitless scramble for some kind of shelter. When the bombardment of ashes and stones subsided they proceeded on and reached the summit.

We can well imagine the party standing there on the rim of the crater. These four men were duty bound to return with a supply of sulphur, and their reputation for bravery and accomplishment was at stake. Nevertheless, they probably shivered not only from the cold windy blasts but from apprehension, as the earth rumbled beneath their feet, as wisps of choking fumes, smoke and steam swept over them, clearing only for a moment to reveal the seething masses of lava in the crater below, where one of them must descend. Perhaps some secretly wished themselves back in the warm sun of a Mexican plaza or in a comfortable adobe house, lying across a grass-woven sleeping mat served with tortillas and sauced fowl by a round faced Indian maid. Perhaps another remarked that if they were going to do anything they might as well go ahead and do it. The extent of their apprehension is apparent from the fact that the party cast lots to see which one of them would make the descent into the crater. The lot fell to Montaño himself. With a rope tied around his waist and played out by the men above, according to his own statement, he descended into the crater for a distance of several hundred feet, with swimming brain, oppressed by fumes, and in danger from eruptive substances. We do not know much of the quality of his "climbing" rope. It was probably a very flimsy affair of short ropes woven by the Indians and tied together. Montaño himself regarded it as an extremely slender support which might at any moment break and send him into the hell-fire beneath. After delivering a bagful of sulphur seven times, he was relieved by one of his companions (said to be Juan de Larios) who made six trips. As a result of the efforts of the two men, a total of about 300 lbs. of sulphur was obtained. This was deemed sufficient and, in a hurry to escape from their uncomfortable and uncertain position, they began the descent, which they made with some difficulty, burdened and poorly equipped as they were. They managed to thread their way around and through the crevasses, although they slipped several times on the snow-covered surface and several times broke through the crust into a crevasse. Occasionally they collided against some sharp projection, or loose-lying rocks.

As they approched the camp at the foot, the natives came forth with enthusiastic cheers to bear the adventurers on their shoulders. Their journey to Coyuhuacan was a triumphal march, and Cortez himself came to welcome them with an embrace.

Montaño was too humble an individual, however, to receive the same attention as Ordaz, who used his less valuable performance, magnified by "political pull" in Spain to obtain a coat of arms and grants. An *encomienda,* scanty even for his ordinary services as participant in the conquest, and wholly insufficient for the support of himself and his family, and a two-year term of office as *corregidor* with a salary of two hundred pesos was all that his repeated appeals to the king and counselors could secure.

Because of the dangers no further ascents were made by the Conquistadores, after that of Francisco Montaño.

Thus, the adventure of mountain climbing, born in the New World in the breast of these boldest and bravest Conquistadores, perished. For three centuries, and until 1827, no one again looked into the steaming mouth of Popo. What a different history might have been written for mountaineering if there had not been new worlds to conquer upon new continents; and if those Conquistadores should have been compelled to find an outlet for their love of adventure in the mountains of the world—as we of this day and generation must do.

Note.—The accounts in this article have been compiled from numerous available sources. In addition to sources stated in the text and footnote, particular credit is given to Bancroft's *History of Mexico,* and authorities there cited.

The writer of this article has climbed the three highest peaks of Mexico, including Orizaba, 18,700 ft., Popocatepetl, 17,888 ft., Ixtaccihuatl, 17,000 ft. The first two present no particular technical difficulties, although crampons and ice-axes should be carried and one should be equipped for all extremes of temperature. The same is largely true of Ixtaccihuatl, although on this peak one must be careful in selecting the route, and the climb is probably comparable to one of Mont Blanc. This climb of Ixtaccihuatl is one of the most beautiful on the continent south of Canada and is to be recommended for all who go to Mexico.

In most of the reported ascents of Popo, the party has climbed only to the lowest part of the crater rim, but the Pico Mayor is some 800 ft. higher and some additional hours are required to reach it and return. At 17,000 ft. the atmosphere is one-half of what it is at sea level, and in fifteen steps one is as much out of breath as if he had run a hundred yard race at lower altitudes. The effect of the very high altitude must be taken into account by anyone planning the climb.

The months of October to March, inclusive, are the best months for climbing Mexican peaks, November being generally preferred by the Mexicans.

Alpine Panoramas and Peepshows

J. Monroe Thorington

TOWARD the end of the eighteenth century there arose in many European cities and towns the urge to make, exhibit and view models of the Alps, for the dual purpose of refreshing the traveller's mind and to emphasize the birdseye view—the tridimensional effect, since few valley wanderers a century ago had any conception of the immense interlocking topography of mountain massifs. Such exhibits, supplemental as they were to stage production with Alpine scenery, focused attention directly on the mountains themselves. Here was no posturing hero, no swooning heroine, no incidental music or even plot. It was topography alone, a novelty, and the public liked it.

Reliefs

Relief maps are intended to represent a portion of ground in a fashion true to nature. In the glacier garden at Lucerne one can still see the earliest triangulated map of the Alps, made by Lieut.-General Franz Louis Pfyffer (1716-1802) during 1766-85. At the end of ten years' work the portion completed was 9.5 x 12 ft. Coxe (*Sketches in Switzerland,* 124) says: "The principal part is composed of wax, the mountains of stone, and the whole is coloured. . . . The plan is so minutely exact that it takes in not only all the mountains, lakes, rivers, towns, villages, and forests, but every cottage, every torrent, every bridge, and even every cross is distinctly and accurately represented." The final dimensions were 22.5 x 12 ft., the horizontal scale being 1 : 13,000 and the vertical 1 : 10,000.

De Saussure examined this model on several occasions when he was the general's guest (*Voyages,* §1944), and in 1791 visited Aarau to see similar work by Johann Rudolf Meyer (1752-1833; his sons made the first ascent of the Jungfrau in 1811), a silk manufacturer who had made some small reliefs as a basis for printing mountain panoramas on fabrics. Meyer had also engaged Johann Heinrich Weiss (1759-1856), a geographer of Strassburg, to undertake a relief of Switzerland 7 x 14 ft., from Mont Blanc

to the Lake of Constance, which de Saussure (*Voyages,* §1941) thought would be finished within the year.

Co-worker with Weiss was Joachim Eugen Müller (1752-1832), of Engelberg, who had assisted in the making of Pfyffer's model. For the purposes of the new work, Meyer, Weiss and Müller ascended the Titlis in 1787, and Weiss crossed the Oberaarjoch about 1796. H. Dübi ("The Early Swiss Pioneers of the Alps," *A. J., 33,* 77) says that the relief (1:60,000) "was constructed between 1786 and 1797 under Meyer's supervision at his house in Aarau by Weiss and Müller. A few smaller ones were made by Müller alone, especially one representing the Alps from Thun to the Italian lakes, and from the source of the Rhone to the mouth of the Lötschenthal."

Although the relief was not completed until 1797, during the period 1796-1802 Weiss brought out sheets of his *Atlas of Switzerland* (16 sheets, 1:115,200—made from the relief, as was then the custom, contour sheets not appearing until a later time), the best topographical representation of that country for a generation. In 1803 Meyer sold the relief to the French government for 25,000 francs, and Napoleon installed it at St. Cloud.

Caspar Rohrdorf (1773-1843), of Zürich, saw the reliefs of the Oberland by Weiss and Müller in the Berne museum, and decided to issue a new edition of the smaller one corrected by observation in the field. This he did in the summer of 1828, when he was the first to reach the Jungfraujoch and the Mathildenspitze (Sattelknopf). In December he deposited the finished work in the Berne townhall, advising the public that copies (15 x 20 inches) could be ordered. One of these is still to be found at Zürich.

Charles-François Exchaquet (1746-92), early explorer of the Col du Géant and director of the mines at Servoz, about 1786 "was constructing and selling relief maps of the chain of Mont Blanc, of part of the Valais, and of the St. Gotthard group. The models of Mont Blanc, sold for the high price of thirty louis, were made of wood, the snows and pastures being shown in their natural colours and the glaciers represented by fragments of spar tinted sky-blue." The interest in the Alps, awakened by the ascent of the highest summit, created a demand for reliefs of this kind, although but two examples of Exchaquet's relief of Mont Blanc now exist, one presented by Baron de Gersdorf to the Görlitz

museum and another in the collection of the Geneva section of the S. A. C.[1]

When Napoleon was in Chambéry in 1805, a model of Mont Blanc[2] 12 ft. long was placed in his apartment with the following lines appended:

"Sur ses bases éternelles
Le Mont Blanc est moins assuré
Que dans nos coeurs fidèles,
De tes lois l'Empire sacré!"

In 1817, J. B. Troye, of 30 Frith Street, Soho, who advertised himself as a pupil of Exchaquet, and had probably been his workman, was offering for sale small models of Mont Blanc; and also exhibiting the *Mountains of Swisserland* at the Museum, Piccadilly, a series of carved reliefs, as described in his booklet, *A Short Account of Mont Blanc and the Valley of Chamouni:* ."The representations of the undermentioned Places in relievos . . . are modelled after nature by the author, J. B. Troye, who resided purposely on the spot, and who was Pupil to the celebrated Exchaquet, Draftsman to his Majesty the King of Sardinia. As J. Troye has carved in wood several relievos of these places under the direction of Exchaquet himself, he can, from the experience he has had, offer with confidence his services to amateurs in general, for the executing, in a similar manner, and with similar accuracy, a model of whatever place may be the objec [*sic*] of their preference. The Mont Blanc Valley, of Bagnes, lately inundated, and Passage of the St. Bernard. Switzerland. City of Geneva, carved in Wood. Simplon."

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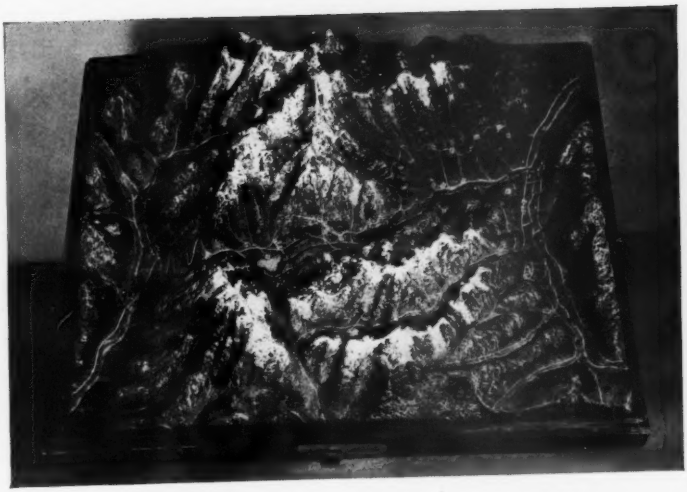
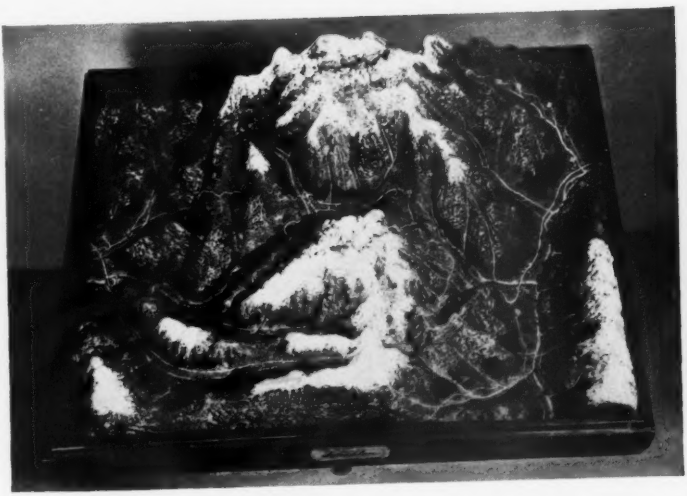
[1] Through the courtesy of M. Paul Gilliand, we have received a photograph of this model, the Geneva section also possessing one of the St. Gotthard by Exchaquet. The Mont Blanc relief (1:34,000) is illustrated in J. P. von Berchem's *Itinéraire de la vallée de Chamonix.* From that of the St. Gotthard (1:16,666) was made the map for C. de Mechel's *Itinéraire du St. Gotthard* (1795). Exchaquet also made a relief of the vicinity of Aigle (1:15,000), a smaller one of Lake Geneva, and one of the Diablerets (150 x 150 cm.), an example of the latter being preserved in Berne. A detailed description of this work will be found in *Journal de Lausanne,* December 1st, 1787. Charles-François Exchaquet is mentioned by B. Studer (*Geschichte der Physische Geographie der Schweiz,* 439), by H. Dübi (*Wyttenbach und seine Freunde,* 75), by H. F. Montagnier ("Early History of the Col du Géant," *A. J., 33,* 363), as well as in a biographical study in *Die Alpen,* xi (1935), 187; so Coolidge (*Swiss Travel,* 173) would seem to be mistaken in ascribing the reliefs to Henri Abram Exchaquet (1742-1814), Freshfield (*Life of de Saussure*) following the same error. Even Montagnier (*loc. cit.*) was unaware that any of these reliefs still existed.

[2] Probably by Louis Albert Bacler-d'Albe (1761-1824), who had lived for seven years at Sallanches and had become Napoleon's chief topographer.

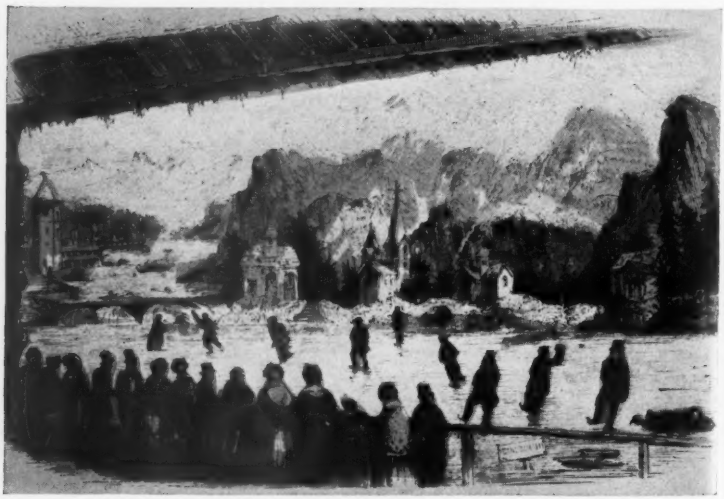


RELIEF OF THE MT. CENIS PASS BY J. B. TROYE



RELIEF OF THE SIMPLON PASS BY J. B. TROYE

RELIEF OF THE CHAIN OF MONT BLANC BY EXCHAQUET
S. A. C., Geneva



THE GLACIARUM, PORTMAN SQUARE, IN 1843
Illust. London News

In a later notice (1821) from 8 Soho Square, "Models of the Valley of Bagnes, of the Simplon, of Mt. Cenis, of Mt. St. Gothard, of Switzerland, and the Valley of Chamouni, are executed and sold by J. B. Troye, Sculptor and Modeller of Her late Royal Highness the Princess Charlotte of Saxe Coburg, and to His Royal Highness the Duke of Gloucester at his Exhibition of the Mountains of Swisserland."

Three small reliefs by Troye, in the writer's possession, are made of papier maché and mounted in wooden cases 11 x 13 inches, in the lids of which are keys to various numbered points. The scale is approximately two inches to one mile. They are finished with care, forests and individual clumps of trees being represented by green fabric fluff, while rivers and roads are painted in, with tiny paper bridges thrown across the streams. Tunnels are actually cut through the buttresses, and each relief had more than 100 minute red-roofed houses arranged to show the locations of cities, villages and even isolated chalets. The average size of the houses is little larger than one cubic *millimetre,* and an attempt has been made to show relative scale, hospices (the tower of the Mt. Cenis hospice is 2 mm. high) being larger than ordinary houses, making the appearance far more real than is the case of Pfyffer's relief, where church steeples are often as tall as nearby peaks. The mountains are painted in natural colors, snowfields ending in glaciers made of crystal fragments.

(1) *Passage of the Mont Cenis.*—On this model the road is shown in zigzags from Lanslebourg to the pass, but a straight blue line marked *La Ramasse* indicates the sledge route long a feature of the descent on the north side. A bit of blue glass indicates the Lac du Mont Cenis. S. E. of the pass are the Roche Michel and Roche Melon, the winding road with its villages and bridges being shown as far as the city of Susa. A road (? to the Col du l'Autaret) curving S. E. from Lanslebourg is called *Route établie par le Roi de Sardaigne.*

(2) *Model of the Simplon, with the New Road and Rocks excavated by Napoleon Buonaparte to facilitate the Passage of the French Army into Italy,* is the lengthy title of the second relief, but which dates it within a few years after 1805. It extends from the Rhone (valleys of St. Niklaus, Saas and Binn) southward, the road winding through tunnels and across bridges from Brigue to Domodossola, past the hospice and village of Simplon.

The Saflischjoch (Binn to Bérisal) is called *Passage de la Furca.* E. of the pass are the following peaks: Frugerhorn, Mederhorn (1900 fathom, accessible), and Pic du Lion (Monte Leone); to the W. are Fluschorn (Fletschhorn) and Frigishorn. The named glaciers are Alatsch (Aletsch), Remi-Gels, Breitshorn, Kalt-Wasser and Mont Rosboden 1600 fathom. Brigue is said to be 207 fathoms above the Mediterranean.

(3) *Mont Blanc,* acquired by purchase through the Alpine Club, is the relief mentioned by Freshfield (*Life of de Saussure,* 244). As Troye described himself as "sculptor to her late Royal Highness the Princess Charlotte," and as this lady (daughter of George IV) died in 1817, the model is in all likelihood the first of Mont Blanc to have been made in England. Its details are easily recognized when compared with modern airplane photos.

Only two of the higher peaks are given elevations in the printed reference table: Mont Blanc, 14,556 ft. and 'Aig. d'Argentière, 11,412 ft. The Aig. de Bionnassay is called Mont Suc. On Mont Blanc are indicated (on the Grand Plateau) the *Passage de Saussure* and the *Grotte au l'on Couchè.* The Aig. du Midi is properly shown, but the remaining needles W. of the Mer de Glace are grouped as Aiguilles de Charmoz, the legend being applied in the position of the Aig. du Plan. At the Montanvert we are shown the Hospices de Mons. Blair, the Hospices de Mons. Deporte [*sic*] and the Pierre des Anglais. The Jardin is indicated, and the Mer de Glace then descended to the *Arveiron et sa Grotte.* La Grande Jorasse and Le Géant are shown in proper relation to the col, where the legend places a Chalet des Mulets.

The Verte, Dru, Aig. d'Argentière (legend placed on location of les Courtes), and Aig. du Chardonnet are also shown, the latter bearing the older name of Aiguille à Bochard. At the head of the Argentière Glacier is a pointed peak which might well be Mont Dolent, although this portion of the chain was not accurately known for another quarter of a century. The Glacier du Tour is named, as are also the Col de Balme and the Tête Noire. Le Prieuré de Chamouni is given an elevation of 3154 ft. On the Italian side, Courmayeur is not shown, but the Lac Combal is correctly placed. Strangely enough, the legend for the Brenva Glacier is placed in the location of the Géant séracs.

When Sir Thomas Raffles visited Chamonix in 1817, a Monsieur Crotet offered his services as guide to the glaciers. "He

traced out to us the plan of our route upon a beautiful model of the Alps of Savoy, executed in relief, which he brought with him for the double purpose of information and traffic."

In 1825, M. Gaudin, a maker of barometers, exhibited a *Model of Switzerland* at Egyptian Hall, Piccadilly. He then moved it back to Geneva, where its location is shown in Burford's panorama of that city (1827). Frederick Clissold saw it there in 1822, prior to his ascent of Mont Blanc, and says that "this model is 24 ft. long and 19 wide; exhibiting the whole line of the Jura, the Alps and intermediate country." Markham Sherwill, returning from Chamonix in 1825, thought this relief as perfect as could possibly be made. The Alpine Club (London) possesses an undated relief of Mont Blanc signed by L. Gaudin, made at Geneva. It is of plaster and measures 18.5 x 24 inches, the glaciers and snowfields colored white, icefalls in light brown, foothills green with trees indicated in black.

A German cartographer, K. W. Kummer, constructed a relief (*Stereorama*) of the Chamonix Valley and Mont Blanc, showing it about 1822 in Berlin, the scale being 2: 1,000,000.

Dr. Martin Barry ascended Mont Blanc in 1834, and in March, 1836, described his adventure in two lectures for the benefit of the Royal Infirmary of Edinburgh, illustrating the discussion by a relief (46 sq. ft.) executed by Slater, an Edinburgh sculptor, which was then presented to the Royal Museum of Natural History in that city.[8]

At Chamonix in 1855 there was exhibited a large-scale relief of the Alps, from Mont Blanc to the Simplon, by Michel Carrier, as well as a diorama depicting various events in the ascent of Mont Blanc and adjacent peaks. The relief had been constructed considerably earlier, Carrier having received a medal for it at the National Exposition at Turin in 1844.

It was probably another model about which, at some time after 1870, Clinton Dent wrote: "We studied the *carte en relief,* but without much hope of getting any information of value from this inaccurate and lumpy absurdity. Mont Blanc, which according to this work of plastic art, was modelled out as some eight or ten thousand feet higher than any other point of the chain, had all

[8] The director of the Royal Scottish Museum states that the relief was one of a number of models destroyed about twenty years ago because of their bad condition and exaggerated vertical scale.

the snow worn off its summit by much fingering . . . Still a considerable number of people seemed willing enough to pay fifty centimes for the pleasure of indicating elaborate expeditions on it with their forefingers, and appeared to derive pleasure from gazing at a pasteboard misrepresentation when they could by looking out of the window see the real thing for nothing."

In 1857 a relief was being shown on the Promenade du Lac, Geneva, covering Mont Blanc, the Valley of Chamonix and the Great St. Bernard. It was 20 x 14 ft., completely carved in wood after six years of study and work. Six hundred thousand tiny firs were planted to represent the immense forests, while villages and chalets were shown in miniature. The scale was 1 : 6000, embracing Martigny, the Buet, St. Gervais, the cols du Bonhomme, des Fours and de la Seigne, the Allée Blanche, Courmayeur and the valley of Aosta.

Mark Twain, in his *Tramp Abroad* (1878), did not disdain a lesson in topography when working out his journey from Interlaken to Zermatt. "The courier thought that the portier of the hotel might be able to tell us how to find our way. And so it turned out. He showed us the whole thing on a relief-map, and we could see our route, with all its elevations and depressions, its villages and its rivers, as clearly as if we were sailing over it in a balloon. A relief-map is a great thing."

For the Eastern Alps it may be mentioned that Pauling, of the Austrian Military-Geographic Institute, made a large relief of the Semmering (afterwards destroyed) for the Paris Exposition of 1855. For extraordinary devotion, however, one must turn to the reliefs of F. Keil, born in 1822 at Graslitz, Bohemia. Giving up his vocation as a pharmacist, he moved to Salzburg in 1859, where he literally starved until the value of his work attracted official attention. He made a relief of the Gross Glockner (1 : 48,000), enlarging this in three sections to cover the Tauern Range from the Dreiherrenspitze to the Ankogel, the whole being preserved in the Salzburg Carolino-Augusteum. In checking measurements Keil was killed by a fall on the Hochschober in 1876.

Panoramas

A panorama is a pictorial representation of the whole view visible by an observer turning to look successively at all points of the horizon. They were frequently constructed on the interior

of cylindrical surfaces 60-130 ft. in diameter, and were first executed by an Edinburgh artist, Robert Barker, as early as 1788.

Marquard Wocher (d. Basle, 1820), a well-known artist who executed the engravings of de Saussure's ascent of Mont Blanc, including the suppressed plate of the descent, exhibited a *Panorama of Thun* in Berne about 1814.

Henry Aston Barker charged one shilling admittance to each of his paintings in the great rotunda of the Panorama, Leicester Square, during 1821; his *View of Bern and the High Alps* being shown with an interesting *View of Lausanne and the Lake of Geneva.*

At the Panorama, Strand, during 1827, Robert Burford showed a *View of the City and Lake of Geneva,* painted from drawings made by himself in the preceding year. Mont Blanc is seen in the distance. An interesting opinion is contained in a letter from D. W. Freshfield to John Ruskin in 1878: "Calame and that man . . . I forget his name—were merely vulgar and stupid panorama painters. The real old Burford work was worth a million of them." Albert Smith said of Burford that he never could be an orphan, as he was never without a pa-nor-a-ma!

Burford first presented his *View of Mont Blanc, the Valley of Chamounix, and the surrounding Mountains* at the Panorama, Leicester Square, February 3d, 1837, from drawings which he and his assistant, Mr. Selous, had made from the Flégère in 1853. "The time represented is evening, when the atmosphere is nearly cloudless, and the snow-clad heights shine resplendently, the lofty peaks reflecting the richest hues of the setting sun, long after the luminary which gilds them has sunk below the mountains and become invisible to the lower world . . . On our entering the room we felt as if *shut in by shadows.* In attempting justice to the aerial perspective of such a landscape, within the limited circle of the panorama, it must be, indeed, difficult for the artist to avoid sacrificing something of firmness and substance. With every succeeding minute, however, one object after another seemed to *come out*—one vista after another to open itself before us. The nearer portions of the picture are painted with unusual care and delicacy."

Although the mountain had been depicted by Daguerre in his Paris diorama of 1833, this was probably the first time Mont Blanc was shown on such a large scale in England. Burford was offering a *Panorama from the Rigi* as late as 1849, when Albert Smith

attested to its accuracy. The proprietor felt it necessary to announce that this was not an ordinary shoddy piece of scenery, but a painting made with the finest artist's colors.

The discovery of refrigeration gave further scope to the use of a panorama in *The Glaciarum,* in Baker Street, Portman Square, during 1843. "The small specimen of *Artificial Ice* is *Removed* from the Colosseum, and a surface of 3000 sq. ft. is now exhibiting, and open to the Public for Skating on, at all seasons, on which the skaters may be seen performing their elegant evolutions, amidst Alpine scenery, covered with snow and hoar frost, forming a beautiful and faithful Panorama of Lucerne and its lake frozen, taken on the spot expressly by Mr. F. Phillips. From Eleven till Dusk; and in the Evening, beautifully illuminated from Seven till Ten o'clock; with the addition of a Promenade Musicale, under the direction of Mr. A. Sedgwick. Admittance 1s. Charge for Skating 1s. per hour, without additional charge for skates and attendance, which are provided."

A *Panorama of the Bernese Alps* attracted visitors to the Midway Plaisance of the World's Columbian Exposition, Chicago, in 1893. The work of the Swiss artists Durnand, Furet and Auguste Baud-Bovy, it was "of huge proportions, being 65 ft. high and 500 ft. long. Along the horizons are seen sparkling glaciers, great fields of snow, rugged moss-covered rocks jutting out in the air, pastures dotted with Swiss chalets . . . in short everything that makes Alpine scenery fascinating." There is said also to have been a *Diorama of the Alps* by the German artists, Michel Zeno Diemer and Hans Beatus Wieland.

Dioramas

A diorama is a half or other portion of a panorama, large or small, usually transparent to permit variations of lighting. Both panoramas and dioramas may be arranged with foreground objects of receding scale to heighten the illusion of depth.

The Diorama (1822-39).—A method of reproducing landscape was invented by Louis Daguerre (1779-1851), and first exhibited by him on July 11th, 1822. While engaged in making panoramic views he discovered that proper illumination of a transparent canvas painted on both sides would simulate moonlight, changes of season, etc. It appears that a year or so after the Hamel accident (1820) he exhibited in Paris (Jardin de l'hotel

Samson, Boulevard St. Martin) a diorama of Chamonix and Mont Blanc. [This is made use of by Karl Ziak in a dramatic incident of his Mont Blanc novel, *Balmat oder Paccard?* (1930)]. The Paris exhibits were destroyed by fire in 1839. Daguerre was accustomed to bring the dioramic views to London, where they were shown in Regent's Park. Freshfield in his *Italian Alps* refers to one of these as a "sham Switzerland."

The views were two in number, 80 ft. wide and 40 ft. high. The spectators were in comparative darkness, the picture receiving light through a ground-glass roof. The effect was partly optical, partly mechanical, the platform with seated audience (capacity 350!) being revolved at intervals by a winch, bringing the two distinct scenes into the field of view, the scenery itself being stationary. According to the *Athenaeum,* the "Valley of Sarnen" was presented in 1823, "Mt. St. Gotthard" in 1829, and "Val Sesia and Monte Rosa" in 1836.

The *Literary Gazette* (1836) states that "The Diorama, owing to some accident to the machinery, could only exhibit a partial (private) glance at the new subject yesterday—The Village of Alagna, and Swiss mountain scenery. The portion we saw, however, is wonderfully fine; and when the Avalanche is brought to act, in a preceding view, it will be the most extraordinary of these exhibitions."

"On Thursday, the Swiss valley of Alagna was added to the fine Diorama of Santa Croce; and produced from first to last a most impressive effect. The night view of the devoted town, with its lights gradually extinguished, the rising of the howling storm, the alarm from the steeple of the church, the rolling of thunder, and the fall of the dread avalanche, are equal to imagination and almost to reality. The break of morning and the altered face of the valley, the buried habitations and inhabitants, the choked up lake, and the general picture of desolation, appeal powerfully to the feelings. The exhibition is altogether one of great beauty and interest; and never was more skill displayed in this striking walk of Art."

The Daguerre-Bouton Diorama, reopened in Paris in 1833, Mont Blanc being shown after views of the Black Forest. Alexandre Dumas mentions it in *Impressions de Voyage,* while the popularity is further indicated by the fact that one of Mont Blanc,

exhibited for many years at Chamonix, has only recently been dismantled (1937).

At Berne, in 1827, Liddiard (*Tour in Switzerland*) enjoyed a small-scale diorama of the *Rigi at Sunrise*. "First of all, you see the mountain under the influence of twilight, or 'darkness visible,' then under that of various tints which accompany the approach of day, till every peak is resplendent with glorious light . . . very close to nature, and far more interesting than any of the dioramas I have seen in London."

Cosmoramas

A cosmorama is an improved peepshow, a good oil-painting being placed behind a large convex glass, a tridimensional effect resulting from the spherical aberration. Between lens and views a black frame cuts off peripheral rays, and the picture is seen as if through an opening.

Mont Blanc with its *Mer de Glace,* a feature at the Cosmorama (London) in 1838 . . . "by its illusion makes you feel as if in the middle of it—*minus* the cold." Mt. St. Bernard had been the attraction in 1831.

A child's toy, *Miniature Mont Blanc,* was accompanied by a handbook edited by Mme. de Chatelain (2nd edit., London, 1855). "Most of our youthful readers, of those at least who reside in London, are acquainted with the external appearance of Egyptian Hall. They will, therefore, at once perceive that our Little Theatre, as far as outward features are concerned, is a tolerably correct copy of the front of the building. They have likewise, no doubt, heard of Albert Smith's Mont Blanc . . . Now, of course, we do not pretend that, on so small a scale as our tiny theatre, we can vie with the grandeur of Mr. Beverley's views, any more than we can borrow Mr. Smith's happy knack of narrating; but on looking through the glazed aperture on the front of the building, the youthful spectator will see a complete miniature transcript of Albert Smith's room, even including the portrait of the clever lecturer himself; and the views, faithfully copied on a reduced scale, will be successfully shown."

In the collection of M. Paul Payot, of Chamonix, there is a small peepshow *Ascent of Mont Blanc,* made of paper in the fashion of a hollow concertina (so-called *Vues d'Optique,* made in Paris about 1825). When this is stretched out, one looks through a

round hole at an interior series of colored "wings" on which portions of the mountain, together with a climbing party, are seen as if in perspective.

The Alpine panoramas and dioramas have vanished; a few of the ancient reliefs are still to be seen in museums, overshadowed by splendid modern examples based on contoured maps and stereoscopic photographs. But, from these exhibits, fading in memory, our fore-runners learned their way across glacial passes from one valley to the next, and their contribution to the sport of mountaineering should not be allowed to pass unnoticed.

PROCEEDINGS OF THE CLUB

SECRETARY'S ANNUAL REPORT

Year 1940

Our membership has made an unusually large net gain during the year to a new high total since the Club was founded in 1902. Six Active Members have died: M. Helen Smith, Major Norman R. Streatfeild, George N. Whipple, Mrs. Mary Vaux Walcott, Louis Sussdorff, Jr., and our former president Rev. Harry P. Nichols; also our Honorary Member Lord Tweedsmuir (John Buchan). One member resigned, and one was dropped. Thirty Active Members have been elected. There were at the end of the year 10 Honorary and 264 Active Members.

Four meetings of the Board of Directors have been held: on January 13th, May 18th, October 25th and November 30th.

The twelfth issue of the Journal appeared in March under Dr. Thorington's editorship. The third edition of *A Climber's Guide to the Rocky Mountains of Canada*, 299 pages, brought up to date through the 1939 climbing season by the editors of the two previous editions, Palmer and Thorington, was distributed gratis in May to those members who had requested it, and is still available at $3.00 ($2.50 to members). An article by Francis P. Farquhar on *The Literature of Mountaineering,* reprinted from Appalachia, was sent by the Club to all members in May. Our Honorary Member, Mr. William H. Jackson, now in his ninety-eighth year, brought out his autobiography in the fall under the title *Time Exposure.* Another edition of the By-Laws and Register, including the climbing records of all members through the 1939 season, was prepared by the Secretary and sent out in June, and will continue to be available to members on request.

On November 30th Mr. and Mrs. Fisher entertained about 90 members and guests at their apartment in New York. Dr. Thorington and Mr. Hainsworth showed colored moving-pictures taken in the Canadian Rockies between the Columbia Icefield and Brazeau Lake, after which there was time for general sociability until the conclusion of a very pleasant evening.

Due partly to the war and somewhat by chance, the field season of 1940 was not as productive of new ascents or exploration by

our members as usual. Washburn's return to Alaska with several Harvard climbers and skiers, resulted in the first ascent of Mt. Bertha (10,182 ft.), an outlier at the S. end of the Crillon-LaPérouse massif on the Fairweather peninsula. Mrs. Washburn accompanied her husband and three others to the summit. Only one other woman has completed an important Alaskan climb: Mrs. Dora Keen Handy, who overcame many obstacles to conquer Mt. Blackburn (16,140 ft.) in 1912 after two seasons of determined effort. A few first ascents and new routes were made nearer home. In the Canadian Rockies, Hall climbed a peak (ca. 10,100 ft.) E. of the Canoe River, 12 miles N. of (and visible from) the bridge carrying the new road across the Columbia at the Big Bend, for which he has suggested the name, "Mt. Dunkirk"; and also the highest Murchison Tower, the latter 40 miles N. of Lake Louise, from which, as a starting point, the round trip was made by the new road in 30 hours. A party of Sierra Club members made the first ascent of the difficult Snowpatch Spire, in the Purcells.

HENRY S. HALL, JR.,
Secretary.

ANNUAL MEETING

The 38th Annual Meeting of the Club was held at the Appalachian Mountain Club, 5 Joy Street, Boston, on Saturday, January 18th, 1941 at 2.30 P.M. President Rogers presided and there were 35 members present, a few more members and guests coming in toward the end for the speaking program.

The reading of the Minutes of the previous Annual Meeting, which had been published in the Journal, was by motion omitted. The Secretary read his Annual Report (printed elsewhere) which was voted approved. The Treasurer's Report (printed elsewhere) having been mailed to all members and there being no questions or comments, was on motion approved without being read. Copy of the treasurer's report, however, was presented and filed with the minutes and, at the same time, the treasurer presented a full audited report of the operations of the Club for the year and of its balance sheet as at December 31st, 1940, prepared by Peat, Marwick, Mitchell & Co., which audit was also filed with the other records of the meeting. The treasurer pointed out that this was the first time in the Club's history that outside auditors had gone over the

Club's records, and stated that he would like to see this precedent continued in the future in view of the ever growing size of the Club and the broadening of its interests.

Wood reported that the collection of Maps was being gradually increased, an important addition in 1940 being a set of sheets from the Italian government, received ten days after Italy had entered the war.

Hall referred to Miss Buck's report as Librarian giving the total number of volumes in the library as now over 3400. Additions during the year were made by purchase and as gifts from Dr. Thorington, Mrs. Greene and several members. The rooms were redecorated at the end of the year.

Hall reported that all but $201 of the $1,350 needed for the ambulance to be presented through the British American Ambulance Corps, Inc., and to be inscribed "American Alpine Club in Memory of Major Norman R. Streatfeild," had been received. (A few days later the full amount had been promised, and the ambulance ordered.)

Henderson, chairman of the Committee on Guides' Training, spoke of the fine type of young men who were now working at Mt. Rainier as guides, where he and Hall had spent two days in August to talk with our member Clark E. Schurman who has effectively taken hold of the guiding situation there, and to Major Tomlinson, Superintendent of Mt. Rainier National Park. Properly qualified parties would not be required to take guides for the ascent, and on the other hand, competent guides and all necessary climbing equipment are available at Paradise Valley Inn for all who wish to make the ascent and are physically capable of doing so. Four diplomas had been awarded by the Club to men whom Mr. Schurman judged competent to act as guides on Mt. Rainier in 1939, and four in 1940. House asked if the program was to be extended elsewhere. Henderson replied that this has not yet been successfully attempted. A course of instruction near Denver had not been attended by men capable of becoming competent guides. The men guiding at the Tetons could not go as far as Denver. Other difficulties in carrying out the instruction program were explained. Miss Reid asked if there was an index of information as to climbing guides and trail outfitters. Hall replied that there was not, and that such a file would at best be difficult to make complete and

even more so to keep up to date, but offered to help any members in that connection who would write to him.

Mr. Rogers spoke for several minutes on the Club's offer to the Secretary of War to aid in the program for National Defense in connection with the specialized knowledge which many of our members have acquired about equipment and living and travel in the high mountains. A committee with Walter Wood as chairman has since been appointed and is now working on a report to supply information to the government already requested from official sources. It was hoped that the Club will be able to be of definite use in this field, and the possibility of cooperation with the skiers through the National Ski Association was referred to.

Terris Moore said that some members hoped that a better date for the Annual Meeting could be chosen in the future—one which would interfere less with skiing week-ends. A show of hands disclosed that those present were about evenly divided in their preferences between a date in November and one in December, with almost no support for January. The Secretary called attention to the present by-law provision that the meeting be in December or January, and suggested for next winter, Saturday, December 6. This seemed to be generally approved, and was recorded informally as the meeting's preference, and, unforeseen circumstances precluded, is likely to be the date of the next Annual Meeting and Dinner.

The Secretary reported that 106 cards had been returned by members in expressing their opinions on the two amendments to the by-laws as follows:

86 favored both amendments.
9 voted YES on the Vice-Presidents and NO on the Councilors.
5 voted NO on the Vice-Presidents and YES on the Councilors.
1 voted NO on both.
1 voted YES on the Vice-Presidents only.
2 voted YES on the Councilors only.
2 blanks.

No separate poll of the meeting was taken, as the preference of the majority of the replies received, which the Secretary had with him and stated were available to inspection by any who were interested was clear. By-laws 3 and 11 are thus revised to read as follows:

OFFICERS

3. The Officers of the Club shall be a President and three Vice-Presidents, one of which Vice-Presidents shall be elected from the Eastern United States (defined as that portion lying east of 80°W. longitude), one from the Central United States (defined as that portion lying between 80°W. longitude and the Continental Divide), and one from the Western United States (defined as that portion lying west of the Continental Divide), a Secretary, and a Treasurer, who together with nine Councilors-at-large shall constitute the Board of Directors of the Club. The officers shall be chosen at the annual meeting to serve until their successors are elected. The officers may hold office for three successive terms of one year each, but neither the President nor the Vice-Presidents shall hold the same office for more than three successive terms of one year each. Three councilors shall be elected at each annual meeting to serve for three successive terms of one year each, or until their successors are elected, except that in 1941 only, one councilor shall be elected for a term of one year, one councilor for a term of two years, and three councilors for a term of three years. Councilors are eligible for re-election.

SECTIONS

11. The members of the Club residing in Central United States (as defined in Article 3) are empowered to constitute themselves into a Central Section of the Club. The Central Vice-President shall be *ex-officio* Chairman of the Section. The members residing west of the Continental Divide are empowered to constitute themselves into a Western Section. The Western Vice-President shall be *ex-officio* Chairman of the Section. Likewise members of the Club residing elsewhere than in New York are empowered to form local sections, subject to the consent of the Council.

Fisher then offered the report of the Nominating Committee (Fisher, Palmer and Ladd, chairman) appointed by President Rogers. Before reading his report he asked if there were any nominations for Eastern Vice-President as a result of the amendment to paragraph 3 of the by-laws. Hall said that he would like to propose Carlton P. Fuller and since Fuller was to have been nominated to be a Councilor, Hall proposed Kenneth A. Henderson to take Fuller's place. There being no further nominations for those two vacancies, Fisher incorporated them into his report of the Nominating Committee which he then read as follows:

OFFICERS FOR 1941-1943

President	Dr. J. Monroe Thorington
Vice-Presidents:	
(Eastern)	Carlton P. Fuller
(Central)	Henry S. Kingman
(Western)	Francis P. Farquhar
Secretary	Henry S. Hall, Jr.
Treasurer	Joel Ellis Fisher
Councilors	
(1941)	Robert H. Bates
	Kenneth A. Henderson
	William P. House
(1941-1942)	Howard Palmer
	H. Bradford Washburn, Jr.
	Walter A. Wood, Jr.
(1941-1943)	Richard P. Burdsall
	John C. Case
	Terris Moore

No further nominations being made, the Secretary was on motion instructed to cast one ballot for the slate as above, which being done, they were duly declared elected.

Francis P. Farquhar addressed the meeting briefly, conveying greeting from the western members and saying that he always hoped to see more of our eastern members on the Sierras despite the lack of glaciation there, and hoping that on such matters as the National Defense program, and rock climbing and skiing, our eastern and western members would find more of common interest to get together on in the immediate future.

The meeting adjourned at 3.45 and after a few minutes' interval there were the following talks:

Climbs in the Cascades, near Park Creek Pass, northwest of Lake Chelan, illustrated with kodachrome slides, by Kenneth A. Henderson.

Observations roof-climbing at Cambridge University (England), with quotations and comments, by David Allan Robertson, Jr.

A visit to the Olympics with the Mountaineers, and the Tetons from the west and in winter, illustrated with kodachrome slides, by Miss Anne Sharples.

The films promised from California did not arrive in time to be shown.

Canadian Rockies. First ascents of "Mt. Dunkirk" near the Big Bend of the Columbia River, and the highest Murchison Tower, illustrated with slides, by Henry S. Hall, Jr.

The afternoon program ended at 5.15 P.M.

ANNUAL DINNER

The Annual Dinner was held the same evening at 46 Beacon Street, Boston. President Rogers presided and there were 97 present, including 52 members and 45 guests.

After dinner Mr. Rogers took his farewell as President with amusing quips at some of his fellow officers, and then expressing the pleasure which it had given him to work with them and other members of the Club. He then called on his successor, Dr. Thorington, who spoke for a few minutes on the purposes of the Club and of some of his ambitions for it in the near future.

After the tables had been cleared Dr. Thorington introduced the speakers of the evening, first calling upon Mr. Belmore Browne who entranced his audience with a wholly delightful account of his attempts on Mt. McKinley many years ago, particularly speaking of the 1912 expedition on which the actual route to the summit was discovered. He told of the life on dog sled journeys through hundreds of miles of Alaskan wilderness in the winter to reach the mountain, of game seen, and particularly of the great earthquake which almost demolished their camp on the way out, and shattered the northeast ridge of the mountain so badly as to make it almost unrecognizable when Archdeacon Stuck's party had to struggle up it the following year. Prolonged applause followed Mr. Browne's talk and there was a general feeling that he had given the gathering an unusual treat. Illustrations were from his own photographs, and included some of Bradford Washburn's, who also put on his film of the flight around the summit of McKinley, and around the summit of the still unconquered Mt. Hayes.

Bradford Washburn followed with an account of his ascent of Mt. Bertha, near Mt. Crillon on the Fairweather peninsula, in 1940, accompanied by his wife and three other Harvard mountaineer-skiers. The party landed at Hugh Miller Inlet in Glacier Bay, and used dog sleds to cross Brady Glacier before making the ascent by the winding S.E. ridge of the mountain. His superb colored slides made from kodachrome film specially supplied by

Eastman, and moving-pictures, well showed the life of the party on such an expedition. Fine moving and still views of the actual ascent of the peak from the air completed a program of rare excellence which could hardly have been improved upon.

HENRY S. HALL, JR.,
Secretary.

PRESIDENT'S ADDRESS

Introduced at the Annual Dinner by retiring President Rogers, Dr. Thorington spoke, as follows:

Members of the American Alpine Club and Guests: As this is the first occasion on which I have come before you as Presiding Officer, I must thank you for your kindness in conferring such honor upon me. It has been made easier for me because I recall that Professor Fay, on a similar occasion, expressed my feelings when he said: "There have been two important events in my life, against which all other things were dust; my marriage and my membership in the American Alpine Club." I have found no better prescription for a happy life.

As a physician it is often my duty to guard the secrets of a patient; as a mountaineer I am allowed to "blow the lid off" just a little and to introduce you to our only family skeleton, whose resemblance to any member of the American Alpine Club, I hasten to add, is, as the fictionist would say, purely coincidental. This skeptical sidehill-gouger lives at least a thousand miles from Boston, and typifies that portion of our distant membership which occasionally lifts its head and asks, grimly: "What is the American Alpine Club doing for mountaineering?" I propose to answer that question briefly but so effectively, I trust, that it will not be asked again for a considerable time. I think it useful for our guests to be informed of our objectives.

First, our *Membership*. This is the backbone of any organization. Ours is increasing in quantity and quality beyond our expectations, and is now the largest in our history. When a hunter goes out for a trophy he shoots the biggest thing he can see, and when he hangs it up it looks extremely dead. If one adopts the "Bring them back alive" idea, one need not disdain records, but it is also possible to select the most promising specimens and watch them grow. That is what we do. We try to show young men and women, whose interest in climbing is more than a passing fancy,

that mountaineering is not just a game for acrobats, but, in its larger sense, is part of a pattern which can enrich their lives. We believe that climbers can also be artists, poets and readers.

That we are successful in this leads me to my second point, our *Expeditionary Reputation.* The first tentatives in Canada after the last war were nevertheless sufficient for Captain Farrar to say: "Your young men have in them the same fire which was kindled in the hearts of the founding members of the Alpine Club." We have never had a greater compliment. The man on the street now knows of us from reading such books as "Men Against the Clouds," and "Five Miles High," and the fact is that our axes have cut above the snow-line of five continents, in Asia from Minya Konka to K2, and in the Americas from the Yukon to Santa Marta.

The knowledge thus gained is being put to practical use in our Guides' Training program, in which we teach a sound technique to professional leaders developing in this country, and our knowledge of living under high altitude conditions is being placed at the service of the War Department as part of the National Defence.

Our expeditionary experience has built up for us important international goodwill, and, when the present war is over, we must be among the first to extend the hand of friendship to fellow-sportsmen, without regard to nationality or old animosity.

I turn now to our tangible possessions, first among which are our *Publications.* Our Journal is the principal means of communication with our membership, with other mountaineers and with interested non-climbers. An editor of such a journal is just a marmot trying to be a mountain lion. To himself he is an office-boy, to his contributors a little brother of Simon Legree. I know whereof I speak. World conditions, however, have brought the American Alpine Journal to a position of particular prominence; it will be our privilege to maintain it as the best and most interesting of its kind.

We must next touch on our *Library* in New York, a rich collection which is yours for the asking. There have never been better mountaineering books than those published today, not excepting classics such as Whymper's "Scrambles in the Alps." We hope that our members will adopt the plan of reading two or more of these newer books every year.

Finally, we come to the *Museum Idea,* which a few of us cherish, and for which we are called visionaries. But those of you

who have visited the exhibits at Munich and Berne will have no doubt of their value. We hope someday to have quarters in New York large enough to accommodate our informal meetings, and where the treasures that are available to us can be properly displayed. This can never be done without adequate financial support. I hope you will leave all your money to the American Alpine Museum.

These, briefly, are the things we are striving for. Now I am old enough to have known every President of the American Alpine Club, with the exception of John Muir, and your officers have never doubted the benign spirit which carries forward the objectives of this Club. It is as if we were starting out for a new and splendid peak, beset with difficulties, only to find that an unknown hand had cut many of the steps and that all we had to do was clear the track. And this, to me, has always seemed our most splendid moment—not when one stands on top, for then it can never again be so desired, but that exultant instant when the summit is at hand and all at once we know the day is won.

REPORT OF THE TREASURER

General Account

Receipts:		
Dues, 11 at 15	$ 165.00	
146 at 10	1,460.00	
62 at 5	310.00	
Life membership	200.00	
Arrears paid	40.00	
1941 dues paid in advance	45.00	
		$ 2,220.00
Interest and dividends		616.40
Refund for K2 Expedition		450.00
Reserve for Membership Booklet utilized		600.00
		$ 3,886.40
Disbursements:		
Room rent, light, service		$ 1,169.40
Dinner, net deficit		41.57
Publications:		
Membership Booklet	$ 800.00	
Less contributions	200.00	
		600.00
Guide Book	$ 568.87	
Less sales	125.50	
		443.37
American Alpine Journal	$ 1,789.54	
Less advertising	151.99	
Less current sales	266.91	
Less old number sales	82.00	
Less contributions	479.50	
		809.14

Committee Disbursements:		
K2 Committee		$ 87.18
Guide Training Committee		7.65
Library Committee	$ 113.32	
Less sales books	16.00	
		97.32
Map Committee		26.00
Miscellaneous, postage, printing, etc.		419.27
		$ 3,700.90
Excess receipts over disbursements, GENERAL ACCOUNT		$ 185.50

BOOKLET RESERVE ACCOUNT

Receipts	$ 00.00
Disbursements:	
Transfer to General Account to take up cost of Publication	$ 600.00
Excess Disbursements over Receipts Booklet Reserve Account	600.00

BALANCE SHEET

	Jan. 1, 1940	Dec. 31, 1940
Cash in Chase National Bank, General Account	$ 961.13	$ 759.04
Cash in Chase National Bank, Map Account	200.00	174.00
Cash in Chase National Bank, Booklet Reserve Acct.	600.00	.....
Cash in Brooklyn Savings Bank, Whymper Account	216.39	220.73
Cash in Brooklyn Savings Bank, Library Account	295.62	301.56
Cash in Brooklyn Savings Bank, Reserve Account	746.64	961.67
Cash in Brooklyn Savings Bank, Club House Acct.	5,298.98	5,554.07
Total cash	$ 8,318.76	$ 7,971.07
Securities (at Cost):		
1000 par U. S. A. 4-1944 Reserve Account	$ 1,103.33	$ 1,103.33
1000 par Nor. Pac. P. L. 4 Club House Account	866.36	866.36
1000 par Sou. Pac. S. F. T. 4 Club House Account	829.61	829.61
3000 Bond & Mort. Corp., Club House Account.	3,000.00	Sold
3000 Lawyers Mort. Co., Club House Account	3,000.00	2,936.49
2150 U. S. Savings Bonds, Club House Account	.....	1,612.50
10 Shares Gen. Gas & Elect. Pfd., Club House Account	991.67	991.67
Total cash and securities	$18,109.73	$16,311.03

RECONCILIATION WITH DECEMBER 31, 1939, REPORT

Total cash and securities (1-1-40)		$18,109.73
Plus excess General Account Receipts over Disbursements	185.50	
		$18,295.23
Less loss on B. M. Co., mtge. sold	1,384.20	
Less Booklet Reserve utilized in full	600.00	
Total cash and securities (Dec. 31, 1940)		$16,311.03

CONDENSED STATEMENT OF ASSETS

As at December 31, 1940

Cash in banks	$ 7,971.07

	Principal Amount or Number of Shares
Investments:	
U. S. A. 4% Treasury Bond due 1944-1954.....	$ 1,000.00
Northern Pacific Railway PL 4's 1997.....	1,000.00
Southern Pacific Co., San Francisco Terminal 4's 1950.	1,000.00
Title Guarantee & Trust Co., Guaranteed Mtg. Ctf...	2,936.40
U. S. Savings Bonds—principal amount at maturity in 1950	2,150.00
General Gas & Electric prior 5% Pfd.....	10 shares

We have confirmed the cash in banks and investments of the American Alpine Club as at December 31, 1940, shown in the foregoing statement, by communication with the depositories or by inspection of the related documents.

PEAT, MARWICK, MITCHELL & Co.

REPORT OF THE LIBRARIAN

Valuable additions to the library, including much as yet unclassified miscellaneous material has been received during the year from Dr. Thorington. We acknowledge these with thanks, as well as gifts from Mrs. Greene and various members. We are striving to complete the binding of all unbound material and to bring the Alpine scrap-book up to date. We are glad to report that more non-residents are availing themselves of the opportunity to borrow books, but the number is as yet small.

The library now contains 3400 volumes. Mr. Farquhar presented ten copies of his book on Mt. Olympus (1929) which are available to members at $1.00 per copy, postpaid.

HELEN I. BUCK,
Librarian.

GUIDES' COMMITTEE

This committee continued its activities during the past year, the main effort being made in the Pacific Northwest. Mr. Clark E. Schurman, the Seattle member of the committee, was able to enlist the enthusiastic support of the Mountaineers in Seattle to assist in the instruction work during the winter and again occupied the post of chief guide at Mount Rainier during the summer of 1940.

As a result of the work which he was able to do diplomas were granted to the following four men:

Robert A. Sutermeister, Seattle, Washington.
Kenneth Spangenberg, Saugus, California.
Worth McClure, Jr., Seattle, Washington.
Deo Molenaar, Los Angeles, California.

In addition, the following four men who received their diplomas in 1939 acted as guides at Mount Rainier:

Robert J. Hoxsey, Seattle, Washington.
Lesley M. Yansen, Tacoma, Washington.
James L. Worthen, Los Angeles, California.
Bruce B. Smith, Portland, Oregon.

The work of the committee at Mount Rainier was assisted by the excellent cooperation from the National Park Service and also from the Rainier National Park Company. Nine of the park rangers joined the first scouting ascent of Mount Rainier, while the summit ranger at Paradise was a man thoroughly conversant with the mountain and a big help to the operators.

Some 64 people, including the guides, reached the summit of Rainier in 1940 in parties guided by men in receipt of the club's diploma. The guide service induced most of these people to take preliminary exercise in the guise of classes in ice craft and believe that this accounts for the high percentage of those who started reaching the summit some 93% of the patrons getting to the top.

The Seattle member of the committee is now making a study on the feasibility of erecting a number of small huts on the Kautz Route at Rainier at about 11,500 ft. in order to facilitate the ascent of the mountain. This is the only really feasible route at the present time from Paradise Valley because of the blocking of the former way underneath Gibraltar Rock and the extreme length and difficulty of the Ingraham-Emmons Glacier Route. If this plan proves feasible it may be possible to have similar shelters erected at other points, a much to be desired result.

KENNETH A. HENDERSON,
Chairman.

IN MEMORIAM

JOHN BUCHAN, LORD TWEEDSMUIR
(1875-1940)

He had so many interests and activities that it is hard to picture him as one man. But to see him as he saw himself, at daybreak, "high up in a snow ridge when the world seems to heave itself out of night into day,"[1] is to know the real John Buchan, Lord Tweedsmuir—statesman, author and mountaineer.

Taking this description in a figurative sense, few men can boast of having made a longer, more difficult ascent than did John Buchan. Born in Perth, Scotland, in 1875, in his father's simple, small and busy manse, John Buchan climbed to the top of his twin professions and scaled the pinnacle of recognition and renown. In its literal meaning, the passage is equally apt. Buchan was never happier than when he was in the mountains; his personal life was largely shaped by this passion for the hills, especially the Scottish hills, and his writing owes much of its body and flavor to his intimacy with the mountains and heaths he loved so to describe in his fiction and in his biographies and histories.

Buchan's fondness for the Scottish country-side dates back to his childhood, when, for days on end, he roamed through Tweed Valley, his mind quick to absorb the details of his favorite woods and streams and to identify them with his father's religious teachings, until he finally arrived at the understandable notion that, for example, "the Soul, a shining cylindrical thing, was linked with a particular patch of bent and heather, and in that theater its struggles took place, while Sin, a horrid substance like black salt, was intimately connected with a certain thicket of bramble and spotted toadstools."[2]

From his love of the woody patches in Tweed Valley, Buchan grew to love the Borderland hills where he spent his summers with his maternal grandparents. He explored every stream, crag, scarp and mountain meadow within hiking distance of his home, and, by time he was twelve, his curiosity had lured him across the Tweed and over bog and bent to the range that towered above the gentler Borderland hills. From the day of his first ascent into those moun-

[1] *Pilgrim's Way* (Houghton Mifflin, 1940), 133.
[2] *Ibid.*, 6.

tains—of his first sight of the country stretching far below him, the river a shining cord, the meadows, patches on the rolling earth, his enthusiasm for the hills dominated his private life. During his years at Glasgow University it served as a link between his wild untrammeled childhood and the world of scholarship and logic. It turned his interests and sympathies towards other countries, and it inspired his later years of travel and exploration. It gave his writing the authenticity that characerizes all of his work—an authenticity that shines through every word of this vigorous passage from *The Thirty-Nine Steps*.

> I woke very cold and stiff about an hour after dawn. It took me a little while to remember where I was, for I had been very weary and had slept heavily. I saw first the pale blue sky through a net of heather, then a big shoulder of hill, and then my own boots placed neatly in a blackberry-bush. I raised myself on my arms and looked down into the valley, and that one look set me lacing up my boots in mad haste. For there were men below, not more than a quarter of a mile off, spaced out on the hillside like a fan, and beating the heather. . . .
>
> I crawled out of my shelf into the cover of a boulder, and, from it gained a shallow trench which slanted up the mountain face. This led me presently into the narrow gully of a burn, by way of which I scrambled to the top of the ridge. From there I looked back, and saw that I was still undiscovered. My pursuers were patiently quartering the hillside and moving upwards.
>
> Keeping behind the skyline, I ran for maybe half a mile till I judged I was above the uppermost end of the glen. Then I showed myself, and was instantly noted by one of the flankers who passed the word along to the others. I heard cries coming up from below, and saw that the line of search had changed its direction. I pretended to retreat over the skyline, but instead went back the way I had come, and in twenty minutes was behind the ridges overlooking my sleeping place. From that viewpoint I had the satisfaction of seeing the pursuit streaming up the hill at the top of the glen on a hopelessly false scent. I had before me a choice of routes, and I chose a ridge which made an angle with the one I was on, and so would soon put a deep glen between me and my enemies.[3]

During his years at Glasgow University, he could often escape to the hills, but after he entered Brasenose College, Oxford, he had to limit his outings to his spring holidays. Every year,

[3] *The Adventures of Richard Hannay: The Thirty-Nine Steps* (Houghton Mifflin, 1939), 119, 120.

alone or with a college friend, he explored and re-explored the Borderland hills, or practiced the stiffer ascents in Skye and in the Coolins. He grew as familiar with the ranges as he was with his home climbs. Skye was his favorite, and he soon knew every cranny of its ascents from Sgurr-nan-Gillian to Garsheinn. He loved particularly the sharp transitions of Skye, when, "after a course among difficult chimneys or over faces with exiguous holds, one reached the ridge and saw the Minch, incredibly far below, stretching its bright waters to the sunset and the ultimate isles. Such moments gave me the impression of somehow being outside the world in the ether to which clouds and birds belong, or being very nearly pure spirit—until hunger reminded me that I still had a body"[4]

The Coolins, too, he knew intimately, and his awe at their majesty finds echo in his description in *Mr. Standfast.*

> Mountains have always been a craze of mine, and the blackness and mystery of those grim peaks went to my head. . . . I began to have a queer instinct that that was the place, that something might be concealed there, something pretty damnable.
>
> I remember I sat on a top for half an hour raking the hills with my glasses. I made out ugly precipices, and glens which lost themselves in primeval blackness. When the sun caught them—for it was a gleamy day—it brought out no colours, only degrees of shade. No mountains I had ever seen—not the Drakensberg or the red kopjes of Damaraland or the cold, white peaks around Erzerum—ever looked so unearthly and uncanny."[5]

During the Oxford term, Buchan kept himself in condition by covering as much of the neighboring territory as time would allow. On Sundays, he and his friends would join in the traditional "booms" or all-day outings. His favorite "booms" were the point-to-point horse-back rides which carried him across miles of hills, woods, pastures, stream beds, town streets, and back again at sundown to Oxford to compare adventures with his colleagues.

In 1900, Buchan went down from Oxford with high honors and established himself in London to study for the bar. His plans were interrupted, however, by the Boer War; in 1901 he set sail for South Africa to serve as secretary to the High Commission. Far from his home ranges, Buchan nevertheless found limitless

[4] *Pilgrim's Way, op. cit.,* 132, 133.
[5] *The Adventures of Richard Hannay: Mr. Standfast, op. cit.,* 105.

ground for exploration; he covered most of the northern plateau, the ranges of Northern Transvaal and the kloofs of Drakensberg.

His work in South Africa done, and well done, Buchan returned to London in 1903 and resumed his legal career. He found London life stale and rather tasteless after his vigorous, rough-and-tumble life in South Africa, and he turned to mountaineering to relieve the monotony. In 1904 he visited the Alps, did the usual groups including those of Chamonix and Zermatt, and in 1906 he joined the Alpine Club, a fitting climax to those mountaineering days to which he pays tribute in his autobiography, *Pilgrim's Way*.

> We have many confessions of faith from those who have lifted their eyes to the hills. I like best Hilaire Belloc's in his *Path to Rome*. "Up there, the sky above and below them, part of the sky, but part of us, the great peaks made communion between that homing, creeping part of me which loves vineyards and dances and a slow movement among pastures, and that other part which is only properly at home in Heaven." The wittiest thing ever about mountaineering, I think, was by George Meredith, that "every step is a debate between what you are and what you might become." For myself, it brought me again into touch with the wild nature with which I had lived so intimately in South Africa. My other sport, fishing, did not do that in the same degree; it was essentially a "slow movement among pastures," even when it was pursued in March on the Helmsdale among scurries of snow. Just as sailing a small boat brings one close to the sea, so mountaineering lays one along-side the bones of Mother Earth. One meets her on equal terms and matches one's skill and endurance against something which has no care for human life. There is also the joy of technical accomplishment. I never took kindly to snow and ice work, but I found a strong fascination in rock-climbing, whether on the granite slabs of the Chamonix aiguilles, or the sheer fissured precipices of the Dolomites, or the gabbro of the Coolins. A long rock-climb is a series of problems, each one different from the rest, which have to be solved by ingenuity of mind and versatility of body. I was fortunate to have the opposite of vertigo, for I found a physical comfort in looking down from great heights. Bodily fitness is essential, for there are always courses which you must have the strength to complete or court disaster. In any mountaineering holiday there are miserable days when the muscles are being got into order by training walks; but when these are over, I know no physical well being so perfect as that enjoyed by the mountaineer."[6]

[6] *Pilgrim's Way, op. cit.*, 132, 133.

Buchan felt compelled to give up mountaineering soon after his marriage to Susan Grosvenor in 1906. Although he had never suffered any accident or injury from his climbs, he thought that the sport was too dangerous for a man with his responsibilities. But he found it impossible entirely to forswear his favorite pastime; he chose deer stalking as a safer sport than mountaineering, but, to bring himself as close to the peaks as possible, he concentrated on the high runs—the peaks of Torridon, Glencoe, Dalness and the Black Mount.

In 1906, too, Buchan gave up his law practice to enter the publishing firm of Thomas Nelson and Sons. War again interrupted his plans; during the World War he served first at the front as a correspondent for the *Times*. He was then annexed by the Foreign Office. In 1916 he was commissioned as an officer in the Intelligence Corps, and in 1917, he was recalled from France to fill a post under the War Cabinet. This position, however, he was forced to surrender because of his increasingly poor health, but he remained active in intelligence work in England until the armistice. Many of Buchan's best-known books are the product of his war and post-war years. Most of the Richard Hannay stories, including *The Thirty-Nine Steps* he wrote while he was recovering from his illness; his health would not permit him to indulge in the strenuous exercise he loved, but probably by way of satisfying his hunger for the wind-swept heights, he published in 1923, *The Last Secrets*.[7] This book, one which deserves far more attention than it has received, is, in Buchan's usual fresh and lively style, an account of the famous mountain climbing expeditions of modern history: Sir Francis Younghusband's conquest of Lhasa in Tibet; Capt. F. M. Bailey's trips into the gorges of Brahmaputra in the Himalayas; the Duke of Abruzzi's successful scaling of the Mountains of the Moon. He describes, too, some of the heart-breaking failures of these gallant explorers: General Bruce's expeditions, the ill-fated attempts to climb Mt. Everest, and Captain Rawling's efforts to ascend Carstensz in Dutch New Guinea. Buchan had the greatest admiration for Captain, later Brigadier General, Rawling. At the time of Rawling's death in 1918, Buchan wrote a tribute to him for the *Times* which was reprinted in the *Alpine Journal* of February, 1918.

[7] *The Last Secrets, The Final Mysteries of Exploration* (Nelson, 1923).

But not even the pleasure which such writing must have given him could fill Buchan's need for the woods and the hills. In 1927 he moved with his family to the town of Elsfield, four miles from Oxford. Here he renewed his knowledge of the Oxford country and continued with his writing of fiction and an increasing number of biographies. These biographies retain the vigor and anthenticity of his novels and short stories. His famous biography of Cromwell is characteristic of the life which Buchan could breathe into his biographies by painting a vivid picture of the localities which figure in the lives of the characters he described. His quick sketch of Marston Moor, the scene of Cromwell's famous battle, is the work of a scholar and an outdoorsman.

> Marston Moor lay seven miles west of York city between the roads to Boroughbridge and Wetherby. In length it was about a mile and a half, much overgrown in its western parts with furze and broom, and sloping gently northward to Wilstrop wood, a point some fifty feet above the sea. Along its southern rim lay a ditch with a hedge on the far side, boggy and difficult at the center and western ends, but in the middle largely filled up. . . . At the Tockwith end of the ditch was a piece of marshland with a rabbit-warren to the south of it. . . ."[8]

In 1935, King George V appointed John Buchan to his last post and bestowed on him the title, Baron Tweedsmuir of Elsfield. As the Governor-General of Canada, Lord Tweedsmuir's days were probably the fullest of any he had known, but they were not so full but that he could find the time to study Canada as he studied every country he visited. He traveled hundreds of miles by boat down the Mackenzie River to Aklavik in the sub-Arctic, and he crossed the northern part of British Columbia mostly on foot—loyal to the last to his responsibilities as a servant of the Crown, and loyal to his own intense love of the beauty and wonders of "the bones of Mother Earth."

With Lord Tweedsmuir's death last February, England lost one of her finest statesmen, and the world lost a truly great author, scholar and sportsman.

W. S. L.

HARRY PIERCE NICHOLS
1850-1940

In the death on November 15th, 1940, of our beloved past president, Harry P. Nichols, at the age of ninety years, the club mourns an outstanding personality. A member of the small but courageous

[8] *Oliver Cromwell* (Hodder and Stoughton, 1934), 183.

group which formed the society in 1902, he continued for nearly forty years in close contact with it, a fountain-head of inspiration, enthusiasm and wisdom, so it is with a heavy heart that one attempts to sketch the high lights of this long association.

Those early years were fraught with uncertainty; there was no precedent for guidance, no knowing whether America possessed enough mountaineers to support such a club. So we find the original sponsors remaining in office, laying a foundation stone now here, now there. For the first nine years the personnel of the board scarcely changed at all and on it always stood the name of Harry P. Nichols.

A story of that period is perhaps worth recalling. It was related by our subject himself at one of the first dinners and casts an amusing sidelight on the membership problem of the time. The council was canvassing the field of possible honorary members and had passed over a certain distinguished name through ignorance of his past climbing.

Dr. Nichols spoke up somewhat to this effect: "I was once at Zermatt and noticed a stocky individual storming about and coupling the word 'Britisher' with an epithet never used by way of praise. On being introduced to him I remarked that I thought he was a Britisher himself. 'Britisher'! said said, 'Why I am a Knickerbocker of the Knickerbockers. Those blasted Britishers say that we Americans lack sand and don't dare to climb mountains. I am going out tomorrow and climb the Matterhorn,' which he did." A few days later he met Dr. Nichols again and said: "I have done the Matterhorn and now they say that it doesn't count! So I am going to do the Schreckhorn." Dr. Nichols replied: "Well, my friend, I shall not be here when you come back, but I shall be delighted to know how it turns out. Will you let me know at Geneva?" "A few days later," remarked Dr. Nichols, "I received the following characteristic telegram: 'I MADE IT,' signed T. Roosevelt."

And thus the roster of the club was graced by another famous name.

In a personal tribute at the time of his eightieth birthday, a religious periodical printed this: "All that Harry Nichols really cares about are *Mountains* and *Men*. And I am not at all sure that one may not erect an adequate philosophy for time and eternity upon those two words." The article goes on to say: "There are

few older men who have so an wholesome influence on the young as Dr. Nichols. There are some old men who dote on youth because they themselves are in their second childhood; there are others who assume, all too consciously, the rôle of fatherly guidance. But Nichols' young friends seem to meet him man to man. They can hardly do otherwise with one whose body and mind are as active as their own and who is vitally interested in all they say and do."

Hence, saturated with the lore of the mountains and blessed with a legion of friends (five hundred of them contributed, each a page, to a small book presented to him on the occasion of his eightieth birthday), it is not surprising that the leadership of the club was offered to him for the period 1923-1926.

The club had come to a turning point. Climbing had declined owing to the war and it seemed that the older members did not have much contact with the coming generation. Clearly someone was needed to bridge the gap and make younger aspirants feel at home. Unanimously, opinion agreed that Dr. Nichols was the man to do it. He demurred at first on the ground that his active years of alpinism were too far behind, but in the end was persuaded.

He wrote: "My only possible qualification is that I have an enthusiastic belief in the value of the Club, and entertain the highest hopes for its future. That future depends on securing for its membership a goodly number of younger climbers, qualified alike by enthusiasm for mountaineering and a brave beginning of climbing achievement."

This became the keynote of his term, and at its close the club had attained a growth of 25 per cent. During this time plans for the Mt. Logan expedition were under discussion and Dr. Nichols was indefatigable in organizing local support for the enterprise. He served on the council two other terms, making fifteen years in all and not retiring permanently until 1929.

Up to the end his zeal never flagged. He regularly brought eight or ten promising recruits to the annual dinner as his guests. Of these I do not believe he missed more than half a dozen in the whole series. He was always called upon for remarks and, with genial Professor Fay as a felicitous foil, never failed to evoke an appreciative response from the company. On one occasion, I remember, occurred a scintillating exchange of wit on the question as to which, if either, was the Nestor of American mountaineering.

HARRY PEIRCE NICHOLS
(1850-1940)

Photo, Steinberg

DR. NICHOLS ON HIS 80TH BIRTHDAY

Photo, C. N. R.

His Alpine climbing began in 1878 with the Strahlegg Pass, followed in 1887 by several other Swiss peaks, including the Breithorn. In 1893 he turned his steps toward the Selkirks and with S. E. S. Allen and Charles Thompson, made the second ascent of Mt. Fox. This appears to be the first major climb by Americans in the Canadian Alps. Nichols' paper describing it, published in *Appalachia* the following winter, is the first report of an ascent in these mountains to appear in an American periodical, the precursor of the voluminous literature of today. It is credited with considerable influence in directing the attention of American climbers to the opportunities which these magnificent peaks afford.

Allen, who at that time was intently engrossed with climbing and surveying the Lake Louise mountains, honored him by designating a peak on the map with his name. In 1896 Nichols returned to the Alps, ascending among others Mönch, Jungfrau and Mont Blanc.

A busy ministerial life precluded more frequent indulgence in alpinism proper, but in the intervals, mountains of more modest stature were cultivated assiduously. In fact he spent most of his leisure, and in later years, most of his life, among the White Mountains of New Hampshire. In the '80s, when they were largely a pristine wilderness, he travelled and climbed extensively, joining the Appalachian Mountain Club in 1881. His home, "Concordia Hut" at Intervale, in the shadow of Mt. Washington, was a mecca for mountaineers. He is said to have climbed Mt. Washington 250 times.

After his active climbing was over, he made many visits to mountain regions, tramping the woodland trails and botanizing amongst the forests and flora. In 1919 he sojourned at Glacier House in the Selkirks and in 1926 visited Jasper Park. In 1922 he was in the Colorado Rockies. Often he attended the summer camps conducted by the Alpine Club of Canada, of which he was an active member. On several occasions he represented the American Alpine Club there. Later he wrote: "I certainly advocate friendliness and affiliation between different climbing clubs, not only in this country but in other countries. I hope all our members will climb every summer. Remember that the legs are the last to give out. I trust I shall be climbing at one hundred. Age has its privileges. One is to see our children and grandchildren come

into membership. I climbed a mountain with my grandchildren this morning."

Dr. Nichols was born at Salem, Mass., September 30th, 1850, the son of Charles Saunders and Amelia A. (Ainsworth) Nichols. After attending Salem High School, he was graduated with the class of 1871 at Harvard and studied for the ministry at Andover Seminary and Philadelphia Divinity School.

Ordained a deacon in Philadelphia in June, 1876, he later served as Rector of St. John's Free Church, Philadelphia, and of St. Paul's Church, Brunswick, Me. He held successive ministries at Trinity Church, New Haven, St. Mark's Church, Minneapolis, and from August, 1899, until he retired in 1922, he served as Rector of Holy Trinity Church, New York.

Considered a progressive figure in the Church, he was a delegate to many of its general conventions.

In 1905 he delivered and published the Bohlen lectures on "The Temporary and Permanent in New Testament Revelation." He was a member of the Century Association and various church organizations. On his seventieth birthday he received a loving cup and testimonials from nine bishops and fifty-six clergymen, among them his Harvard classmate and close friend, the Rt. Rev. William Lawrence, bishop-emeritus of the Episcopal Diocese of Massachusetts.

In closing, this tribute from a friend of the cloth seems appropriate: "He was the most completely energetic man I ever met, a climber with his body, a seeker with his mind, one high affectioned in spirit. I have never known him to speak ill of any human being. People's interests claim him, and to him human personality is sacred."

H. P.

NORMAN R. STREATFEILD

Long before the Club's 1938 K2 expedition left this country, its members asked the British government to lend Captain Streatfeild —the wiry Scot who had done such splendid work as liaison officer of the French expedition to Hidden Peak in 1936—to be liaison officer of a new expedition to the Karakoram. This keen, active British gentleman, who was soon to become one of the younger majors in the British army, already held a fine military record for

his work with mountain artillery, and was noted for his many trips to Baltistan.

He had left Sandhurst and been in India some fourteen years before we knew him. During this period he had crossed a 22,000-ft. pass, climbed several 20,000-21,000-ft. peaks, and explored many unknown valleys in the Karakoram. On these small expeditions he had done valuable mapping for the Royal Indian Survey, and probably had come to know the Karakoram region as well as any white man. Between times he had indulged in tiger hunting and other shooting, and had won the Military Cross for valor under fire while fighting in Waziristan.

Our expedition in 1938 knew him as an extremely practical and capable transport officer (with a ready twinkle in his eye, and a fondness for American slang) who never missed a chance to help the group. Streatfeild was a part of the expedition as much as anyone. He supervised the transport of the party some 330 miles from Srinagar to K2 and back, took full share in the reconnaissance of the mountain, carried loads to the lower camps, and between times found leisure to do considerable mapping for the Indian Survey.

Late the same summer he was recalled to England to teach in the Artillery School at Larkhill. He had planned to visit America during the fall of 1939, but actually he was sent to France with the first British expeditionary force to go. Later he tried unsuccessfully to be transferred to Norway, where his knowledge of mountain fighting would have been so valuable. Throughout the winter in Flanders, Tilman reports, he frequently showed 8 mm. movies of the Karakoram to his troops, and by his constant care for their welfare bolstered their morale. He was drowned at Dunkirk.

Though Streatfeild was a member of the Club for only a year and a half, our loss is significant.

R. H. B.

LOUIS SUSSDORF
(1888-1940)

Louis Sussdorf was born at Elmhurst, L. I., N. Y., January 7th, 1888, the son of Louis Albert Sussdorf and Rebecca Morse Hyatt. He attended the Cutler School in New York City and was graduated from Harvard in 1910. He entered the diplomatic service shortly thereafter and had been located at various times in Paris,

Rio de Janeiro, Asuncion, Berne, Helsingfors, The Hague, Tokio, and Riga.

In addition to mountaineering he was interested in skating and skiing, and was a member of the Metropolitan Club in Washington. He married Flores Howard at New Orleans in 1919.

Sussdorf was a member of the Alpine Club (London) and joined the American Alpine Club in 1933. In addition to numerous ascents in the Alps he had climbed in Canada and Japan. His final season was 1939, when he ascended Mont Blanc by the Dames Anglaises and the Aig. Blanche de Peuteret. His last post was as Consul-General at Brussels, and he met his death in a motor accident shortly after the fall of Belgium.

J. E. F.

M. HELEN SMITH
(1876-1940)

Helen Smith was born in Newark, N. J. She was graduated from Mt. Holyoke College in 1898 and a few years later became a biology teacher in Manual Training High School, Brooklyn, N. Y.

From childhood she was an out-of-doors enthusiast. During the early years of her teaching she spent her summers with her mother at her camp on a Maine lake. She enjoyed travel and took several trips abroad and in the United States and Canada. She was greatly interested in art and music, and photography became one of her hobbies.

Her mountain climbing began in the Canadian Rockies in 1919 and she became an enthusiastic life member of the Alpine Club of Canada. During the next fourteen years she spent most of her summers in the Rockies, attending camp, taking pack trips and staying at the Club House in Banff. Wherever she went her winning personality, her warm interest in people, her sympathy and loyalty, made many devoted friends for her.

She loved the great snow peaks and everything connected with them—flowers, trees and animals. She did all the climbing, tramping and pack tripping that her strength and purse would permit. Her camera was her constant companion.

For several years she was secretary of the New York section of the A. C. C. She became a member of the American Alpine Club in 1928.

Helen Smith kept her enthusiasm for many activities to an unusual degree. When she retired from her teaching in 1938 she was planning happily for the many things she could do with her greater leisure. But almost immediately her health began to fail and she died in a Brooklyn hospital, January 11th, 1940.

E. P. M.

MARY VAUX WALCOTT
(1860-1940)

Mrs. Mary Vaux Walcott, of Washington, a member of the American Alpine Club since 1904, died August 22nd, 1940, while visiting friends at St. Andrews, New Brunswick. She was born in 1860, the daughter of George and Sarah Morris Vaux, and was a descendant of several old Philadelphia families. She was married in 1914 to Dr. Charles D. Walcott, Secretary of the Smithsonian Institution, and previously Director of the United States Geological Survey. She continued to reside in Washington after Dr. Walcott's death in 1927.

In the very early days of the Canadian Pacific Railway, the Vaux family began their annual sojourns in the Canadian Rockies. Mrs. Walcott and her brothers, the late George Vaux, Jr. (a founding member of the American Alpine Club and the late William S. Vaux, Jr., were all expert photographers, and as early as 1887 the first photographs of the Illecillewaet Glacier were made. They measured annually, with only one omission, from 1898 to 1922 the movements of the Illecillewaet and Asulkan Glaciers, making elaborate photographs of these and also of the Victoria Glacier at Lake Louise. They afterwards made the first measurements on the Yoho Glacier in the Yoho Valley, which were later handed over to the Alpine Club of Canada, of which Mrs. Walcott was also a member.

In 1899 she made the ascent of Mt. Avalanche, at Glacier House, and in 1900 climbed Mt. Stephen and Abbot Pass, both being the first ascents by a woman.

Mt. Mary Vaux (10,250 ft.) in the Maligne Lake region was named for her. It was first climbed in 1923.

Mrs. Walcott was an exquisite painter of wild flowers, and her *North American Wild Flowers* was published in five volumes by the Smithsonian Institution, to which she later added one on *Pitcher*

Plants. These volumes were designated by Charles H. Sargent as "An Audubon of Botany." She travelled widely on geological expeditions with her husband while he was the head of the Museum, and later made annual visits to various Indian Reservations in connection with her duties as a member of the Board of Indian Commissioners, to which she was appointed by President Coolidge to succeed her brother, George Vaux, Jr., until this Board was discontinued in 1933. She was also a member of the American Association for the Advancement of Science, the Academy of Natural Sciences of Philadelphia (with which all the members of the Vaux family were long and actively associated), the Association of Women Geographers, the Trail Riders of the Canadian Rockies, the Colonial Dames of Pennsylvania, besides the Canadian and American Alpine Clubs.

Mrs. Walcott's gracious personality will long be remembered by a wide circle of friends.

J. H. S.

CHRISTIAN HÄSLER
(1889-1940)

With the passing of Christian Häsler on October 31st, 1940, a strong and skillful climber, a capable and resourceful guide, a splendid companion, and a gay and wholesome spirit has left us, and all who had the privilege of really knowing him will sorrow.

Christian was born in the hamlet of Gsteigweiler, near Grindelwald, on December 15th, 1889, and was in his fifty-first year at the time of his death. He received his guide's license from the Swiss Alpine Club at Meiringen, Switzerland, in 1911, and came to Canada in 1912, replacing his father, Christian Häsler, Sr., famous in the early history of climbing in the Canadian Rockies. His wife, Rose Margaret Feuz, came with him and they were married the day after their arrival in Golden. Their home was in the Swiss village of Edelweiss built by the Canadian Pacific Railroad on a hillside above Golden. Christian was stationed at Field but was transferred in the following year to Glacier House, where he remained for many seasons. Not the least of the inducements to visit that delightful hostelry of days long past, was the opportunity of visiting and—if weather permitted—climbing with "Chris." After the closing of Glacier House in the autumn of 1925, he was regularly to be found at Lake Louise.

MARY VAUX WALCOTT
(1860-1940)

CHRISTIAN HÄSLER
(1889-1940)

Having been one of the younger guides in the Canadian Rockies, fewer first ascents by him are recorded than for some of the others, among those credited to him being: Beaver Mtn. and Mt. Duncan (1913); Uto Peak (first traverse), and Tomatin and Findhorn Peaks of Mt. McBean (1914); two new routes on Mt. Fox (1916, 1924); Iconoclast Mtn. and two neighboring unnamed peaks (1924); *Camarade,* on the E. ridge of Augustine Peak (1929).

Glacier remained for Chris his favorite district. His knowledge of the peaks and familiarity with the routes there was complete. Every cliff and summit held memories for him. There he climbed with the McIntyres, Dr. Eggers and other members of the little coterie who called themselves the "Sir Donald Club." The N. W. arête of Mt. Sir Donald was probably his favorite ascent.

After the Glacier House was torn down, Chris took parties back to Glacier. There they were comfortably if informally lodged at the home of the fire-warden, Bill Hartley, now deceased. Chris always regretted that the Hermit Hut had fallen into disrepair and that the Glacier Circle Hut was being used so seldom.

In the Lake Louise district he discovered the chimney on Popes Peak now used as the usual route; made new routes on Glacier Peak, Mt. Allen, Mt. Deltaform and Mt. Neptuak; the second traverse of Mt. Victoria (S. to N.), and the first ascent of Mt. Weed. During these years he made numerous trips far afield with one of the writers and climbed in most districts of the Rockies from Mt. Assiniboine to Jasper and Berg Lake. The high spots were perhaps the ascents of the Goodsirs, the first ascent of Mt. Trident, in the northern Selkirks, through the alders and devil's club of British Columbia forests, and the first complete ascent of Mt. Bryce from Rice Brook. In 1936 with W. N. Hogg, Chris made a successful expedition to Bush Mtn.; the view of that peak always gave him great joy. In 1939 with Miss Gardiner and Edward Feuz, Jr., he climbed Mt. Robson.

It was an interesting experience to climb with Chris either with a party or alone. He picked his routes to suit the capacities of his party and never allowed his good humor to be disturbed, even by the weariest and grouchiest of climbers. He had the faculty of keeping up a continual entertainment of humorous comment or comical antics which would bring in a tired party full of enthusiasm and in complete good humor. To see him give an imitation of a

mountain goat coming down a mountain was alone worth all the effort of the climb.

Chris had a great fondness for mountain goats. "They are my friends," he used to say, and where they went he found his route. On Mt. Eon he followed a goat trail for hours back to camp at Marvel Pass. Long and tortuous as it seemed at the time, there proved to be no better route and it saved us many more weary hours. On the last climb he made with one of the writers, Mt. Burgess from Emerald Lake, goats fled before our advance. We followed them up the cliffs to the summit ridge.

It was a particular pleasure and education to climb with him alone, or with a well-matched companion, and discuss with him his reasons for choosing a particular plan of ascent or descent. He would often take one up a particularly interesting bit and, having overcome it, point to an adjacent route and say "See, we could have come up that way, that would have been easy—but not so much fun." One had the satisfaction of feeling that, so far as the mountain and time permitted, he had been given the opportunity of doing all that his knowledge of climbing technique qualified him to undertake. It was a pleasure to see him climb a difficult cliff, for he moved with an ease and certainty that was a delight to watch, often accompanying the accomplishment of even the most difficult bit with humorous comment on the character of the holds or the nature of the rock. His greatest skill as a mountaineer lay in his genius for route finding. He never hesitated and he never missed.

In the presence of a gathering he was quiet and retiring, but around the fire after a day's trip with one or two he was both an entertaining and an interesting companion, commenting with evident understanding on the news of the period and, on one occasion, asking intelligent questions (all too unintelligently answered) regarding the Einstein theory as set forth in a recent newspaper article. "It is an era of conferences," he used to say in discussing world events in which he took great interest and of which he read a great deal.

He never quite understood the democratic ways of Americans. The first to resent any inference of inferiority or slight, he nevertheless found it hard to accept the level of equality of a democratic society. He would say, "I'm Christian Häsler; not Mister Häsler."

Those who have known and climbed with Chris at his best, know that he was hard to beat. He loved life and people and best of all he loved mountains. He always had a certain nostalgia for Switzerland although he knew he could never return there to live. But he never was quite reconciled to the loneliness of the Canadian Rockies. Once at Abbot Pass Hut this loneliness appalled him. It was a perfect night, a full moon and every prospect for fine weather to climb tomorrow. But the hut was empty and his yodeling echoed unheard among the peaks. In his mind's eye he saw the crowded huts of Switzerland, the gay groups of climbers, heard the songs and the tales of fellow guides. It was too bad, so much to enjoy, so few to enjoy it.

He was a devoted husband and father. His wife was a cousin of the Feuz brothers, and their house was filled with her handiwork. Chris always resented being separated from his family for so many months of the year, at Lake Louise in the summer to climb, and in winter to take care of the Château and shovel snow from the roofs of the bungalow camps. He never let his sons climb, so that they could never be guides and live away from home as he lived.

In the last few years Christian was pursued by misfortune. A broken ankle which laid him up for some time was followed by the serious illness of his wife. Next his younger son was killed by an explosion, and this heavy blow was followed on September 19th of last year by the attack by a grizzly bear which nearly ended his life and that of his companion; the death of his wife occurred in March of this year while he was still in the hospital under treatment for his injuries.

Although broken in spirit and physique by this series of calamities he was determined to get back to the mountains. They alone, he wrote, could act as comforters. He climbed with parties at the Glacier Lake Camp of the Alpine Club of Canada in July, although out of the hospital less than three months, but weakened to such an extent that he was compelled to leave during the second week.

The exact cause of his death will never be known. He was engaged in building himself a small house because, after his wife's death, he felt he could no longer occupy their old home. While working on the roof he fell and was dead when help arrived. Apparently the terrific mauling inflicted by the grizzly had undermined even his rugged constitution and precipitated a heart attack.

It is possible that, even had he lived, he would have been unable to continue climbing.

Our sorrow that we can never again be with him in the mountains is tempered by the thought that probably it is as he would have wished. "If I cannot climb," he said, "I don't want to live. It would be better if I had died up there in the mountains." We have lost one who was more than merely a guide, and the memories of his climbs will be ever associated with his warm and friendly personality.

L. G.
F. N. W.

BOOK REVIEWS

Edward Whymper, by Frank S. Smythe. 8 vo., xiv + 330 pages, with illustrations, map and index. London: Hodder & Stoughton, 1940. Price $6.00.

There are new things in this book: the striking frontispiece portrait by Lance Calkin, and reproductions of Whymper's engravings, not all of which are generally known. There is little doubt but that this work will become the classic biography of the Matterhorn's conqueror, for it has had the sympathetic handling of the author as well as cooperation from the subject's surviving relatives. The early diaries, here published for the first time, throw light on developmental features in Whymper's character, a serious youth sent to the Alps as an artist, thereafter drawn to them as explorer, but never forgetting his artistry. In this lies the secret of the literary vitality of *Scrambles,* by which his memory will be kept alive.

Mr. Smythe naturally devotes much of the book to the Matterhorn, to Greenland and the travels in the Andes, and presents a penetrating analysis of his hero's shortcomings. "He had no friends; he did not even appear to want to have friends; Nature alone was his friend and that only in a remote, detached sort of way difficult to analyze or describe. He moved through life, one part of him, the intellectual part, awake, the other part, the intuitive, sympathetic part asleep. . . . Edward Whymper passed without fulfilling or expressing himself as he might have done, a great man who might have been far greater." This unfortunate temperament was not improved by the horror of the Matterhorn accident which hovered over him during later life, and from which neither intemperance or an ill-considered matrimonial venture provided avenues of escape.

Too little is said about the Canadian episodes, and it is unjust to intimate that Klucker's outbursts were the cause of failure in 1901; the halls of the old hotel at Field echo too many memories. Witness also the success of the guides when climbing by themselves or with Outram, for whose companionship Klucker had nothing but praise.

Days of Fresh Air, by the Rt. Hon. L. S. Amery, M.P. 8 vo.; 320 pages, with 53 illustrations and index. London: Jarrolds, Ltd., 1939. Price 16*s*.

The coincidence of having gone to the Boer War and also to have climbed one or many high peaks connects a group of remarkable men. We include Winston Churchill because of his ascent of Monte Rosa, but more particularly members of the Alpine Club such as Percy Farrar, John Buchan and the writer of the present volume, Leopold Amery. This is Amery's autobiography down to 1914, and, as he offers pictures of himself going strongly as recently as 1937, one can reasonably infer that, if conditions permit, we may hope for another volume.

The world at large thinks of Amery as a strenuous politician, former Minister to the Colonies, one of the initiators of the Singapore base, and now Secretary for India, but a more select circle knows him as a past Vice-President of the Alpine Club who has climbed and made friends in all parts of the world. He is unique in having eponymous peaks in two continents, of both of which he made the first ascents. The daring attempt on Mt. Robson in 1909 is one of the highlights in his book. There are chapters on mountaineering in the Alps, Rockies and the peaks of South Africa, and yet Amery's book is more comprehensive than one dealing with climbing alone, for we have also his wanderings from Serbia, Macedonia and Asia Minor to Hudson Bay and the Fraser River. The South African chapters give a vivid picture of a war correspondent's contacts with the important figures of the time, not the least interesting of which was his meeting with Cecil Rhodes, the whole constituting a joyous Odyssey to which one can confidently hope for a sequel.

Approach to the Hills, by C. F. Meade. 8 vo., 265 pages, with numerous illustrations from photographs, two maps and index. New York: E. P. Dutton & Co., 1940. Price $2.75.

Twenty-three essays make up this book of experiences by a famous climber. Not all of them are his own, for he begins with a chapter on Antoine de Ville's ascent of Mont Aiguille in Dauphiny in 1492. This was made by order of Charles VIII of France, and was the earliest climb on which artificial aids were extensively used. But the great guides whom the author knew best, Blanc Greffier

and Pierre Blanc, needed no such assistance and would have despised it. The biographical sketches of the two form entertaining chapters, and are followed by the author's description of his ascent of the Guglia di Brenta with Blanc in 1909. We then have detailed accounts of some of the modern assault climbs, on the Dru, Eigerwand, Grandes Jorasses and Watzman. Mr. Meade adds the story to his exciting balloon voyage from Paris to Mont Blanc, and a charming account of bringing a Christmas tree to the children at Bonneval-sur-Arc.

The second half of the book deals with Himalayan wanderings, notably the attempts on Kamet, in which Meade took a leading part some thirty years ago.

J. M. T.

The Everlasting Hills, by J. Waller. 8 vo.; 190 pages, with 64 plates and 4 sketch-maps. London: Blackwood & Sons, 1939. Price 15*s.*

"I have become a great believer in luck; it seems to me that the mountains are kinder to those who cannot be expected to know their dangers." So writes twenty-eight-year-old James Waller in *The Everlasting Hills* despite his own evidence to the contrary. Again and again this British army officer in India tells us that "the route was swept by avalanches," or "if he had slipped I knew I couldn't hold him; and he touches lightly on the accident to his Masherbrum expedition, from which four men returned with hands and feet mutilated by frostbite.

Waller evidently learned to climb in the Himalayas, where he found at once the thrill of guideless climbing and of mountaineering expeditions. With no technical training he set out to learn by himself. He did. At least he learned a lot about special Himalayan problems, about food and transport and weather. From his early attempts on Thayiwas Peak (15,928 ft.), which he later climbed, and subsequent attempts on Nun (23,410 ft.) and Saltoro Kangri (25,400 ft.), he learned that he could use more knowledge of technique. Accordingly he spent a summer in the Alps with a first-class guide. The good weather of that summer and the ease of recognized ascents behind a guide gave him a somewhat contemptuous attitude toward alpine climbing. On his return to India in 1936 he "saw no reason why a party of complete novices should not undertake Alpine type climbs in the

Himalayas." The phrase is vague, of course, but lives might easily be lost by those following his advice.

In the summer of 1937 Waller made an attempt on Machoi Peak with native support alone. He says he then had a theory that a single European with native carriers could do better on a big peak than a group of Europeans. His experiences made him change his mind, and in 1938 he secretly organized an expedition to Masherbrum (25,660 ft.) in the Karakoram. This group included five experienced British mountaineers, five Sherpas and two local villagers. Two of the climbers, Harrison and Hodgkin, successfully reached a point only 600 ft. below the summit, and with better luck apparently would have reached it. However, a series of accidents, when a tent was buried by a small avalanche and then two climbers were forced to bivouac in a crevasse during a storm, caused such frostbite that the attack was given up. Four men in all were frostbitten, two of them so badly that they lost most of their fingers and toes.

The book has superb pictures, as well as an unusual attitude toward Himalayan climbing and climbing in general. Waller takes pains to emphasize that the Himalayan climber is not a special sort of superman. Far from it. But neither is a tyro climber one who can be turned loose in big mountains without warning. The dangers of big mountains must be fairly estimated. This Waller does not do. He takes great pains to show truthfully that climbing is possible for large numbers of people. He does not show that safe climbing depends little on luck and much on experience.

The Adventures of a Mountaineer, by Frank Smythe. 8 vo.; 217 pages, with 17 illustrations and brief appendix.

From youthful strolls in the Lake District and North Wales we follow the climbing career of Frank Smythe as he treads Dolomite limestone, Chamonix ice and granite, and finally the great snow peaks of the Himalayas. *The Adventures of a Mountaineer* is a condensed and slightly different version of much that has appeared in print before. It is written in language any layman can understand, but it tells of ascents that hold the mountaineer's attention. Parts of the book are greatly compressed, for Smythe tries to answer the question, "Why climb mountains?" discuss solitary

climbing, analyze techniques on rock and snow, and yet concentrate on the more eventful experiences of a rich climbing career. Smythe is not a person who can complain that "nothing ever happens to me"; too often there is an unseen being on his rope or he feels that there is some ghostly presence near him. He is also fully aware when he does a good thing. And he does good things; many of them. We hear of the route he and Dr. Brown made up the Brenva ridges of Mont Blanc, of the International High Altitude Expedition to Kangchenjunga, and of his part in the 1933 Everest expedition when he reached 28,000 ft. More sensational are his description of being pulled from a belay on the Grohmannspitze, being struck by lightning on the Schreckhorn, falling 50 ft. in an ice gully during his spectacular ascent of the Aiguille du Plan with J. H. B. Bell, and being swept *over* a big crevasse in the grip of an avalanche on Kamet. Ho, hum, wonder what he will do next?

Mountaineering Holiday, by Frank Smythe. 8 vo.; 229 pages, with 24 illustrations and a map. London: Hodder & Stoughton, 1940. Price 12/6.

This book describes the Alpine vacation and guideless climbing of two experienced English mountaineers. The book is appealing both because it describes people and places familiar to the average alpine climber, and because it clearly pictures people and places we may now revisit only through books. Smythe and Gavin in the summer of 1939 did classic routes and easy climbs as well as hard ones; and like all climbers they had good and bad days. The discomforts of crowded huts and windy bivouacs were compensated by the Chamonix pâtisserie, successes on Mt. Blanc and Mt. Blanc de Courmayeur, and the good fellowship of other climbers on the way. As we read Smythe's account of the guides and the huts, the guided and the guideless, we again see that real mountaineers of foreign countries are instinctive friends, people with a common bond that transcends petty nationalism. Let us hope that when this war is over, Germans and British, French and Italians and Americans will again mingle on summits in the Alps with the same friendliness and generosity as before.

No dull "guidebook type" ascents mar *Mountaineering Holiday.* The illustrations are good, and the style, if too leisurely, moves pleasantly along.

R. H. B.

Baltoro, by Prof. Dr. Günter O. Dyhrenfurth and others (Hettie Dyhrenfurth, Hans Ertl, André Roch). 194 pages, 202 photographs; 3 drawings: accompanying folder containing 4 panoramas, 50 sketches, 4 maps. Basel: Bruno Schwabe & Co., 1939.

For the mountaineer and the student of Himalayan geography alike this book is a valuable asset. Written in German, it presents a compendium of most of the available information on that section of the Karakoram encompassed within the watershed of the Baltoro Glacier. The publication is divided into four parts; the first devoted to sections on Nomenclature, Historical review, Geology, Glaciology, Orographical description of the Baltoro Muztagh, The altitude of Sia Kangri (Queen Mary Peak), Bibliography and a glossary of about 300 Hindustani words useful in expeditionary work.

Part Two, some 90 pages, comprises an abbreviated recital of the information already contained in *Dämon Himalaya,* Prof. Dyhrenfurth's earlier (1935) description of the International Himalayan Expedition, 1934; and Part Three is devoted exclusively to 202 photographs which are divided into four groups: 1, Ten portraits of "Baltoro Pioneers"; 2, Srinagar-Baltoro; 3, The Baltoro region; 4, Little Tibet.

A separate folder contains Part Four which consists of four panoramas, two by Vittorio Sella and two by Prof. Dyhrenfurth; fifty transparent outline sketches corresponding to selected photographs in Part Three; and four maps.

As stated above the book is avowedly a compendium, and as such it attains its greatest merit. To the German-speaking peoples it will have its fullest value for, to the reviewers of knowledge, nowhere else is translated into German much of the geographical and mountaineering information here compiled. To American readers the greater part of the book's information will not be novel for we have the work of Younghusband, Conway, Eckenstein, de Filippi, Desio, Mason, de Segogne, Shipton and Bates already printed in English. However, mountaineers of all nationalities and tongues have happily one common medium of expression which all understand, that of photography, and most appropriately *Baltoro* is dedicated to Vittorio Sella and contains a number of his unrivaled photographs which, though not new,

never lose lustre by repetition. As one might expect, the book is beautifully illustrated and the transparent outline sketches of Part Four enhance the value of the pictures to which they refer, particularly for the student prying into climbing possibilities in the region. In the case of K2, these sketched delineate the route of the 1938 expedition and one is forced to wonder why such a procedure is followed in this specific case only. In no other sketch devoted to peaks which have been attempted or climbed—Skyang Kangri (Staircase Peak), Chogolisa (Bride Peak), Baltoro Kangri I (Golden Throne), Pioneer Peak, Gasherbrum I (Hidden Peak) or Sia Kangri (Queen Mary Peak)—has such been done, and the material is not lacking. One also feels that an opportunity has been overlooked to compile into one map the routes which have been followed in the Baltoro Muztagh, since considerable space is devoted to their accomplishments in Part One.

At the moment Himalayan mountaineering has entered a closed season but *Baltoro* is a most acceptable substitute with which to while away the time and plan for the day when the gateways to the high snows shall be reopened.

W. A. W.

The Alps, by R. L. G. Irving. 120 pages and 130 photographs. New York: Charles Scribner's Sons; London: B. T. Batsford, Ltd., 1940. Price $3.00.

In this small book, illustrated with numerous fine photographs of a loved and familiar region, Mr. Irving presents an enthusiastic and even ecstatic guide to the Alps. It includes a brief geological description for the layman and covers the Alps of Switzerland, France, Italy and Germany. Detailed descriptions of climbs and walking tours are interspersed with historical incidents and accounts of alpine flora and fauna, including incidentally the extinct genus draco.

The author portrays the Alps as a dispenser of solitude, peace, escape and beauty, a land ever to be rediscovered by the individual, where every ascent may be a first ascent "if only he (the individual) refrain from searching the records in which a claim of priority has been made. However, he deprecates the higher and less accessible mountains in central Asia and Alaska as draining the energies under perpetual discomforts. To one

who is devoted to trailless country and untrodden mountain ranges this might not ring true. One will agree with him that "you cannot get the Alps at second hand," that "the competitive element in modern life is one of the very things men go to the Alps to forget," and that "the treasure of the Alps is inexhaustible," but this is true of mountains everywhere.

Mr. Irving's hope, expressed in his author's note, that his book will help the average person to want to spend his holiday in the Alps ought to be fulfilled for, as he says, "The Alps can give to the young who climb them and the old who look at them the knowledge of the things which belong unto their peace."

F. H. W.

Time Exposure, by William Henry Jackson. 8 vo., 341 pages, with illustrations. New York: G. P. Putnam's Sons, 1940. Price $3.50.

To compress the biography of an active life into print in the ratio of one year of life to 3.5 pages of type is a problem that would tax the resourcefulness of many men writing their own biography in their forties, but when a man of ninety-seven tackles it, with the crystal clear recollections of such diverse situations as a family kitchen scene at the age of six, his first pay job in upstate New York in the fifties, the Civil War, Fort Kearney and Julesburg, Salt Lake City and Los Angeles in the sixties, the Yellowstone and the Wind River region in the seventies, Colorado in the eighties, the Far East in the nineties, all through a life that sought to record for others glimpses of every conceivable feature of the times, and all by a man who, by the standards of modern industry, would have been past his age of usefulness fifty years ago (Jackson was ninety-seven when he wrote this), let no one criticize any seeming distortion of the relative importance of one episode over another, or the occasional series of years, blotted out, as it were, by some dark nebula, of which no mention is made in the biography.

With an obvious gift for drawing, Jackson's first job by chance gave him the opportunity to paint window display material, as we say in chain store parlance, and all through his life, even in his nineties, he did murals. That ability to draw or to paint stood him in good stead. His real vocation, from which he earned his living, was photography, but one cannot doubt that his under-

standing of perspective and balance in painting had perhaps as much bearing on the success of his photography as did his painstaking care and inventiveness in sensitizing and developing his "wet process" plates under most adverse conditions. Those readers who may have tried developing the early Lumiere autochrome plates when even with good dark room facilities, a mistake of a few degrees in the temperature of the water would "curl" the emulsion, will understand to what infinite trouble Jackson must have gone in first sensitizing, then exposing while still wet, then developing, not a little 4 x 5 plate, but glass plates up to 20 x 24—and think of the water he had to use in the alkali country, and the dark room improvised onto a buggy.

Just as Jackson comments himself, the years 1870-1878, when he worked as a photographer under Hayden, on the U. S. Geological survey, chiefly in the Wind River and Teton and Yellowstone districts, will undoubtedly make for his lasting fame, and it is through his achievements in those years that the American Alpine Club is glad to count Mr. Jackson as a member. Associated with the well-known painter Thomas Moran, on some of the surveys, he obtained a remarkable record of the scenery of the Wyoming and Colorado country. His Yellowstone pictures are reputed to have been the proof which persuaded Congress to create the Yellowstone National Park—a park of which the brother of President Rogers of the American Alpine Club is now superintendent, a curious coincidence.

This same month the writer has had occasion to read the biography of Prof. Marsh, the eminent Yale paleontologist, whose life work was tied to the collecting of fossil vertebrates in this same country, and largely by cooperation with the same Dr. Hayden, and the fact that neither Marsh nor Jackson, both close friends of Hayden, ever mentions the other, although the work of each was necessarily, to a great extent, interlocked with the work of the other, is an interesting sidelight on the vastness of the survey projects of those days.

The book is well illustrated, easily read, holds one's attention from cover to cover and is completely non-technical, and again one cannot help taking off one's hat to such a product—of a man ninety-seven.

O. C. Marsh, Pioneer in Paleontology, by Charles Schuchert and Clara M. LeVene. 8 vo., 541 pages, with illustrations. New Haven: Yale University Press, 1940. Price $5.00.

Every Yale man who ever studied geology in the old Peabody Museum knows the name of Marsh—appended to the descriptions of that array of fossil Brontosaurs, Triceratops, Pterodactyls, or *Dispar,* the bird with teeth. But to many of that generation, the name of Marsh on those descriptions is slightly confused with the name of Marsh at the old Kent Laboratory next door where we studied Marsh gas and, under a hood, the Marsh test for arsenic, so it is not at all amiss that this biography comes along, forty years after Marsh's death, to fix the name of Marsh, so clearly in our minds, whence came what we know about dinosaurs—whether we use Sinclair gasoline with the dinosaur trade-mark or not.

The biographical part of the book gives way continually to accounts of what his field expeditions or assistants accomplished; he had between forty and fifty individuals on his personal payroll and never even drew any salary as professor until 1893!

The Wind River region, the Tetons, the Denver Basin, and the neighborhood of Canyon City furnished many items for the immense collection of fossils which Marsh acquired, making the Peabody Museum the site of one of the most outstanding collections of the world, and among his associates are many names which figure today in the annals of the American Alpine Club—peaks named for Geikie, Hayden or Lyell—or the names of members of the Club today whose forebears were active fifty to seventy-five years ago in outdoors; and one of our present members, Dr. H. F. Reid, in the plate opposite page 261; plenty of reason for including this book in any climber's library, even if the climber does not specialize in geology. (It was Whymper, I think, who said a geologist could never be a good climber, he was always wanting to stop to study the rock where it was rotten!)

Bits of humor find their way into the book, seasoning what may seem like very dry descriptions of some of the fossils, and plenty of scrapping was needed to acquire this outstanding collection of fossils—other scientists also were trying to accumulate them. In describing the collections, much is said of "type" specimens. One cannot help remarking that Marsh, himself, may be considered as a "type" specimen of the genus which today gives

us our climbers. Physically powerful, and at his best outdoors, hardly gregarious but a good picker of men; a good organizer, determined, perhaps too much so at times; cool-headed, cautious, methodical and careful; all climbers will agree in being true to type, when he is pointed out as attractive personally—all climbers will wish they were true to type in reading how he inherited ample means from his bachelor uncle—and he remained a bachelor. But all climbers will claim they are not true to type (but can they all correctly claim this), in reading of Marsh's perennial procrastination! J. E. F.

Alpine Climbing, by E. A. M. Wedderburn. 12 mo.; Manchester: Open Air Publications, Ltd., 1940.

The author has succeeded in producing a very valuable little book on mountain technique for those climbers who have served their apprenticeship in small mountains and wish to tackle the more difficult and varied problems of the Alps or greater mountain ranges. Although intended primarily for British climbers, it should be equally useful to Americans whose experience has been limited to easy mountains or small rock climbs. The general arrangement of the book is excellent, and on the whole can be recommended as a dependable guide to the climber of moderate experience.

In the first chapter there is an interesting definition of the aim of Alpine technique: ". . . to enable one to move securely among the mountains . . . and to enjoy to the full the contrast between apparent danger and real security." This first chapter contains much excellent advice. The rule laid down with regard to the arrangement of climbers on a rope seems rather dogmatic and thought should always be given to the spacing and best order for the particular type of ground and circumstances encountered. It is worth pointing out that for the actual climb, two is usually the best number on the rope, and if this is not a sufficiently strong party, two pairs climbing independently but close together so as to be able to give mutual assistance make the ideal combination.

The chapter entitled "Equipment" seems very good. Mention might be made of the well-known fact that no single type of nailing is good for all climbing conditions. Americans who are used to carrying heavy loads in rough country should bear in mind that the remarks about the Rucksack are intended to apply to the light

loads suitable to difficult climbing. A rucksack with a frame is, of course a nuisance on rock.

The chapter on rock climbing is sound and the general remarks at the beginning of the chapter are particularly valuable. While belays should, of course, be taken whenever possible on difficult ground, their absence over long stretches is quite usual on certain types of rock. The use of pitons, as described, will probably not appeal to old-fashioned climbers who look upon the piton as being justified only for emergency use to escape from a difficult situation or to save time in roping down.

Chapter four contains a good description of snow and ice technique, but the author seems a little optimistic in his statement about the degree of ice slope which can be climbed without step cutting. While there are undoubtedly ice climbers who have developed crampon technique to a point which makes it possible for them to negotiate 60 degree slopes, these are far too steep to be safe for the average climber and, in fact, can only be attempted by those who are extremely proficient in this sort of work. The climber for whom this book is intended would have to cut steps long before the slope attained anything like this degree of steepness.

Chapter five on "Ski" should be found very useful by the less experienced. However, for all except the most accomplished skiers, running roped down a glacier is anything but a pleasure and most ski mountaineers will prefer to avoid glaciers which require this method of descent. The skilled mountaineer who is reasonably good on skis can find his way quite safely down a surprisingly dangerous looking glacier without the rope and without undue risk.

The closing chapters on some of the common dangers and the choice of a route contain many useful hints. Climbers will be particularly interested in the methods of escaping from a crevasse. What appear to be defects to this reviewer are largely matters of opinion and most climbers will enjoy this little book and find it well worth the very modest price.

J. C. C.

Le Chamois, by Marcel A. J. Couturier. 4 to., xi + 855 pages, with 110 tables, 15 x-rays, 473 illustrations from photographs, 34 maps, bibliography and indices. Grenoble: B. Arthaud, 1938.

Although the author brought out his monumental work on the chamois almost three years ago, few copies have reached this

country. But it is by all odds the most important book dealing with *rupricapra.*

Part I, comprising more than half of the book, contains a minute description of the chamois, from x-rays of the embryo to variants of the adult horn, as well as its distribution in ancient and modern times. There is a discussion of fossil remains, geographic variations, maladies and parasites. Interesting sections deal with the chamois in history, art, numismatics and heraldry. Part II sums up the external life of the chamois, its terrain, nutrition and annual cycle. Part III presents the methods of the chase, game-laws governing it, followed by engaging short biographies of early hunters (from Maximilian I to Colani) and their equipment. The bibliography concluding the book contains 1064 items.

Gams in ihrer Bergheimat, by Franz Graf Zedwitz. 8 vo., 73 pages, with 94 illustrations from photographs. Berlin-Lichterfeld: Hugo Bermühler Verlag, 1939.

One of the most expert German photographers and game observers has made a book of the chamois, which beyond all doubt presents the living action of this animal more vividly than it has ever been done before, tracing its life cycle through the seasons of a year. The names of the Bavarian mountains and preserves have been disguised, in order that they may remain undisturbed by tourists, but it is safe to say that the localities are largely along the old frontier E. and W. of the Achensee. The pictures, many taken in winter, are gorgeous, and in numerous instances are arranged to show the sequences of movement. In addition to individual portraits, there are studies of herds on the mountain slopes, with as many as a dozen animals in sight. The shots of racing, plunging bucks, fighting in the rutting season, are unforgettable.

J. M. T.

VARIOUS NOTES

National Defence

In December, 1940, the cooperation of the American Alpine Club was invited by the United States Army. So far this cooperation has consisted of supplying the Army with information concerning equipment to be used in mountainous regions and a preliminary report was assembled by a small group appointed by President Rogers and forwarded to Washington. Upon the election of the new slate of officers and directors a Defence Committee of the Club was appointed by President Thorington and its composition appears below.

Members of the Club are earnestly requested to forward to the Chairman of the Committee any and all recommendations which they feel will contribute to the Army's tremendous task of National Defence. Many members of the Club have had varied and unique experience and their suggestions will be welcomed for incorporation into a comprehensive report on travel and life among high mountains which is now being prepared.

The Defence Committee consists of Walter A. Wood, Jr., Chairman, Carl A. Blaurock, John C. Case, Carlton P. Fuller, Kenneth A. Henderson, Charles S. Houston, Richard M. Leonard, Terris Moore, Bestor Robinson, Clark E. Schurman.

Wyoming Rockies, 1940

Teton Range

Last season (1940) was an active one in the Tetons, with many new routes added to those of previous years. While this list is reasonably complete there may be omissions of new climbs not reported to the writer.

Probably among the most difficult climbs yet done in the Tetons was the W. face of the Grand Teton by Jack Durrance and Henry Coulter. Starting at the bottom of the couloir at the S. end of the Owen-Grand Teton-Three Sisters cirque they climbed toward the Upper Saddle, then straight up over very steep slabs and chimneys past the "crawl" on the Owen route to the summit. The climb took 16.5 hours and its difficulty can be partially appreciated by anyone who has gazed from the Upper Saddle down and across the W. face toward Mt. Owen.

Several interesting climbs were made from the seldom visited canyons S. of the Three Tetons. Paul Petzoldt and Elizabeth Cowles report a first ascent of the N. face of Buck Mt. They found the rock extremely sound and the route comparable in difficulty and interest with the E. ridge of the Grand Teton.

A partial new route up the W. ridge of Mt. Wister was made by the same party. A few days later they completed a new route up Veiled Peak via the W. couloir, descending on the W. ridge.

The Middle Teton had considerable attention from both the N. and the S. Durrance and Coulter climbed the S. ridge—across or over 12-15 towers. This is just to the S. of the couloir which is the ordinary route. A 40-ft. crack on the first tower was climbed artificially with pitons; above the climbing became less difficult to the summit.

The "Dike Pinnacle" of the Middle Teton was reached by Durrance, Margaret Smith, and Joseph Hawkes via the prominent basalt dike familiar to those who have been in Garnet Canyon. Threatening weather and a broken ice-axe prevented completing the route to the summit. Later Durrance, Coulter, Heidekooper and Weiner repeated the Dike climb, but were turned back, as before, by bad weather.

A partial new route led by Elizabeth Cowles with Paul Petzoldt was made on the N. face of the Middle Teton farther to the E. than the main route.

On the Grand still another new route was made via the S. W. ridge by Durrance, Coulter, and Fred Ayres. Starting at the end of the "Black Dike" 700 ft. below and to the W. of the Lower Saddle, the party climbed up over the "Enclosure," completing the ascent via the Owen route. Four particularly noteworthy pitches were reported, among them an "impossible overhanging chimney," alliteratively if contradictorily called "Ayres Ease."

The N. face of Nez Perce was scaled by Durrance and Coulter after an earlier attempt with Fred Ayres had failed because of bad weather. The route runs from the constriction of the "Hourglass" direct to the summit, is exposed near the base, but becomes easier toward the top. The same team made the first descent of the E. ridge of Nez Perce complete. This involved climbing over the two "Teeth" visible from Jackson Hole below. The climb from the notch between the two teeth to the top of the lower tooth—about 200 ft.—is of exceptional difficulty, part of it overhanging and extremely exposed.

Farther to the N. a new route was made via the E. face and S. ridge of Teewinot by Petzoldt and Elizabeth Cowles. The climb was a long one, as the start was made at Delta Lake in Avalanche Canyon.

The same party, with the addition of Richard Cowles and Anthony Whittemore, made a first ascent of Minza Spire—one of the main towers of Mt. St. John.

Robert Bates and William House made an undistinguished but interesting partial new route on Mt. Owen, ascending from the Teton Glacier spirally in a clockwise direction.

In addition to new routes numerous ascents were completed of previously climbed, high calibre routes. Among these were the

E., S. and N. ridges of the Grand Teton, and the N. ridge of Mt. Moran, the latter led by Elizabeth Cowles. It is significant that interest in routes other than the conventional ones has increased. While the Owen route on the Grand still remains the most popular more climbers, guided and guideless, chose the Exum route as offering more continuously interesting climbing. Perhaps mountain climbers are becoming more interested in how they get to a summit than in repeating only the best-known ones.

W. P. H.

Absaroka Range

An ascent of Pilot Peak (11,740 ft.) located in N. W. Park County, Wyo., was made September 15th by George Haas, John Makowski, and the writer from a camp directly W. of Index Peak and 5 miles S. E. of Cooke City, Mont. The approach (explored in 1936 by Haas) to the final 250 ft. may be described as leading southward from the lower W. shoulder of the peak on a nearly continuous bench to two pinnacles under the S. face, then diagonally upward to a narrow ledge (a key point) and so northward to the upper W. shoulder overlooking the lofty N. face. The actual climb began on the S. W. face, 200 ft. S. of this point where a block leans against the cliff, followed up steep but not difficult rock for 60 ft., to the right from under the overhanging wall on a narrow ledge for 30 ft. to a widening, then straight up through a 65-ft. (shallow) chimney overhanging half-way. The party spent more than two hours attempting to evade this point by trials farther to the right and it was climbed only as the last resort. Above, another narrow ledge furnished a good stance with a belay through a sling and easy access (right) to a large detached block (passed inside) from which a broken slope ran up to the summit. No evidence at all could be found of a 1932 or other party on the 6 x 14 ft. top and the two lower points nearby were also searched without success. After leaving a cairn and record we descended quite easily for 200 ft. to the rim of the S. face and E. corner and looked for a possibility for descent, but not enough below could be seen so the route of ascent was retraced on two 80 and two 50-ft. rappels. It was long after dark when we finally stumbled into camp for a much needed rest.

The rock on Pilot is far better than on Index (climbed the year before) and although brittle affords fairly reliable climbing. The route used was much the easiest possibility seen on the trip or by Haas on three previous trips, one of which followed entirely around the W. and S. faces at 11,300 ft. Perhaps when Pilot Peak is better known and other routes explored it will be regarded as one of the most formidable in the American Rockies.

A week later (September 22nd) Haas and the writer climbed Abiathar Peak (10,800 ft.) in northeastern Yellowstone Park by following its 2-mile S. ridge to the summit. An easy route east-

PILOT AND INDEX PEAKS FROM THE CLARK'S FORK

Photo George Haas

"SHADOWS" *Photo, J. A. Makowski*

ward into the head of the beautiful canyon carrying Amphitheater Creek to the Soda Fork was used for return to the highway below Ice-box Canyon. That this attractive peak had survived seventy years of Yellowstone exploration might be attributed to its lack of any very obvious route except the S. ridge. The ridge itself from the Soda Fork valley appears to be quite broken.

PHIL. D. SMITH.

Wind River Range

Gannett Peak was climbed by several new ways this past summer. Henry Coulter, Beckett Howorth, and Charles Webb ascended by way of the N. E. snow face to a saddle on the N. ridge just below the big step. From here the N. ridge was followed to the summit. This is apparently a variant of the route made by Hall, Henderson and Underhill in 1929, and possibly preferable at the present time because of changed snow conditions. The direct ascent of the N. ridge was made on July 16th by Walter A. Wood, Jr. and Floyd Wilson. Leaving a fly camp at timberline about 20 minutes below the Gannett Glacier at 6.30, they arrived at the Gannett-Koven Col at 9.30. From here they traversed S. below the buttress and attacked the bergschrund about midway across the face at 10.15 A.M. Crossing the schrund and climbing the first 50 ft. of face required one and a quarter hours as the former was wide open and difficult. Thence up steep but excellent rock to the N. ridge and either up this or adjacent to this to the top of the buttress, which was reached at 1.15 P.M. The climb was completed by the easy rocks of the N. ridge to the summit, where the party arrived at 2.10 P.M. The descent was by the usual route to the Dinwoody Glacier.

Mt. Woodrow Wilson was climbed for the fourth time this summer by a party composed of Henry Coulter and Beckett Howorth from a camp at the timberline on the S. fork of the Dinwoody. The ascent was made by way of the Dinwoody Glacier and the N. couloir on the mountain.

Turret Peak was climbed by Henry Coulter, Beckett Howorth and Charles Webb who followed a route closely parallel to that of the first ascent by Blaurock and Ellingwood. From Dinwoody Glacier, they ascended the ridge to the right of the scree couloir leading to the saddle N. of the peak. From here they traversed to the left and entered a narrow couloir on the N. side and reached the notch between the N. tower and a subsidiary W. tower. Continuing the ascent just below the crest of the ridge, the N. tower was turned to the right into the couloir between the summit towers. This couloir was followed to the summit ridge and the S. (higher) tower ascended.

The Sphinx was climbed again on August 17th, by John M. Maguire and Floyd Wilson. They traversed from S. to N. below

Photo, J. A. Makowski
SHADOWS

the E. face, thereby avoiding the bergschrund which had stopped several earlier attempts and avoided the slabs of the E. face and traverse of the ridge. They completed the ascent by a well-defined couloir which leads directly to the summit, probably close to or possibly a part of the route of descent of the original climb.

In the southern part of the range a number of new climbs were made by a party consisting of Orrin H. Bonney, Frank Garnick and Notsie Garnick.

Camels Hump, a peak immediately N. W. of Lizard Head, was named and climbed by the party on August 6th from a camp at Lonesome Lake. The N. W. summit had apparently been reached before, and this is probably the peak reached by J. I. Hoffman alone on August 16th, 1931. They then climbed the N. E. pinnacle which is the highest of the group.

Lizard Head was climbed on the same day as the Camels Hump by continuing along the ridge from the latter peak to a large opening between the E. and W. faces of Lizard Head. This point was passed at 12.30 and the summit was reached at 3 P.M. Records of two previous ascents were found here. One dated September 3rd, 1933, was almost illegible, but the name Drummond could be deciphered, the other was dated August 22nd, 1934, and indicated an ascent by G. L. Burnett and Nat Walker, grazing survey crew from the Washakie Trail.

Popo Agie Tower at the head of Lonesome Lake was the most difficult climb made by the party. On August 8th, after reconnoitering the peak, the party arrived at the S. shoulder at 1 P.M. Starting from the corner where the shoulder reaches the perpendicular walls, they ascended the ledges on the southerly side of the peak in an easterly direction across the face. From the end of the last ledge it was necessary to traverse 4-5 ft. across the face to a chimney which was climbed a short distance to a point about 150 ft. from the top where it was possible to turn westerly on another ledge. From this a break in the wall led to the summit which was reached at 2.55 P.M.

K. A. H.

Rocky Mountains of Canada

The following data correct and supplement the 1940 edition of the Guidebook.

Mt. Brewster. 1926 first ascent by H. W. G. Greenham, Miss D. Pilley. From camp at foot of Mt. Edith, crossing Edith Pass and down Fortymile Creek to the S. W. slope of the Vermilion Range, of which Mt. Brewster is the S. peak. No difficulties, following "line of least resistance." Descent via terraced E. cliffs, the only obstacle being a large fissure (6 ft. across and several hundred feet deep) just before reaching upper meadows. Thence down easy turf to trail. Total time from camp 16 h.

Mt. Inglismaldie. New route. 1938, E. E. Bishop, D. R. Crosby. From Anthracite by way of the S. W. ridge in 5 h., thence following the crest and making the first ascent of Mt. Girouard.

Mt. Girouard. 1938 first ascent by E. E. Bishop, D. R. Crosby. From summit of Mt. Inglismaldie descent was made to the Inglismaldie-Girouard col and the narrow ridge followed to the summit of Mt. Girouard, traversing where necessary on the steep face overlooking Lake Minnewanka. Col to summit, 2 h.

Second ascent and traverse. In 1940, Miss J. Atkin, A. Bierwagen, D. R. Crosby, P. Lagerström. From Lake Minnewanka at end of N. ridge of peak marked 9270 ft. on Banff Park map between Mt. Girouard and Mt. Peechee. One should go down the lake until opposite the warden's cabin (on the map mentioned it is shown about 2 miles further down the lake than its actual location). The 9270-ft. peak was ascended by its N. ridge, the steeper pitches being avoidable by skirting to the left. Mt. Girouard is easily reached thence, any difficulties being avoidable by traversing on the S. face. Descent by S. W. gully between Girouard and Inglismaldie to Banff-Calgary road.

Cathedral Pass. As a better route, superseding the Dennis and Duchesnay route from Field to Lake O'Hara, Cathedral Pass (8800 ft.) crosses between Mt. Stephen and the Cathedral massif. It is reached on the railroad side by a 3-mile walk or ride to Cache Creek, the easy valley leading to steep snow and rock slopes of the pass. Very easy slopes lead down to Linda Valley. The pass was crossed in 1909 by T. E. Beveridge and A. A. McCoubrey, leaving the Cache Creek bridge at 1.30 P.M. and making a circuit of the Cathedral massif by evening.

North Cathedral Crag. 1940 first ascent by Miss J. Atkin, D. R. Crosby. From Monarch mine at spiral tunnels up brook W. of Cathedral Crags, ascending by way of the W. couloir. A fair trail leads up the brook for 3 miles, after which there is a mile of broken rock and moraine to cross. The abutments forming the base of the Cathedral massif were ascended at a point almost straight W. of the N. Crag. Following the main water course up this shelf one is led to the bottom of a conspicuous snow couloir between points below the two most northerly crags, here designated N_1 and N_2, the first of these being the northern. After reaching the top of this couloir, which ends in forbidding cliffs, an easy traverse of 150 yards to S. was made where another couloir was followed to the col between N_1 and N_2. Steps were kicked in soft snow most of the way, but ice made an axe desirable in several places. N_2 had a cairn and is slightly higher than N_1, the latter being ascended without difficulty from the intervening col.

Mt. Hungabee. Guidebook, page 73. Route 3 is given incorrectly. The total height of the rope-off is 130 ft. Thence down

S. W. (not S. E.) flank by gullies to a big snow patch, whence Prospectors (not Paradise) Valley is reached a little above Eagles Eyrie. Descent 4.5 h., after which Opabin Pass is crossed in 2 h. to Lake O'Hara. See marked photo in *C. A. J.*, xxiv, facing page 52.

Mt. Owen. 1940, E. Cromwell, Miss G. Engelhard. Probably the first ascent via N. ridge and traverse. From Lake O'Hara via trail over McArthur Pass into valley of McArthur Creek to old campsite at 5000 ft.; 2 h. Thence up E. face (grass slopes, gullies and scree) to N. ridge at timberline. Follow long ridge throughout (pinnacles and rotten rock) to summit glacier cap, where the N. E. snow slope is followed to E. ridge and few hundred feet below the summit. This would be time-consuming if ice were bare. Ascent 6.5 h. from Lake O'Hara. Descent by easy broken rock of S. ridge and S. E. face. Total time from Lake O'Hara 12 h.

Vanguard Peak. The same party. Listed in Guidebook as having elevation of 8800 ft. The summit, which bore no cairn, is as high as Mt. Niles, and therefore about 9600 ft. Guidebook probably refers to slabby E. shoulder prominent from Wapta camp, with survey cairn. Peak ascended, probably a first ascent, lies W. of this shoulder and is separated from Cathedral Peak by the steep glacier by which the latter was first ascended.

From Wapta camp via O'Hara trail for 2.5 miles; then ford Cataract Creek and go up through open woods and alpland, bearing N. W. all the time to S. scree slopes of objective, following these to the E. ridge a little above the slabby shoulder. Thence along the ridge to a shoulder about 9000 ft. (survey cairn). The only real climbing is on the bastion of black rock above the second shoulder. Up steep snow to foot of bastion, which is turned to S., to foot of a 30-ft. stem-chimney. Loose rock to steep, scree-laden ledges and small summit. Ascent 5.5 h.; descent to Wapta 3 h.

Allan Peak and Mt. Ennis. The route described under Mt. Allan should be applied to Mt. Ennis, and, unless other information is forthcoming, Allan Peak is considered to be as yet unascended. Mt. Ennis has been ascended by two routes: (1) The probably identical routes followed by the Survey in 1906 and the Gardiner-Gest party of 1933. (2) The traverse to the Ennis-Vaux saddle as made by the A. C. C. parties in 1939.

Lake Louise-Jasper Highway. Climbers and fire wardens alike have noted the misplacement of several of the road indicators between Bow Lake and the Columbia Icefield chalet, notably those arrows supposed to point to Peyto Peak, Mt. Barbette, Mt. Mistaya, Kaufmann Peaks and The Castelets. The latter indicator, for instance, is placed below the "Lighthouse" pinnacle on Mt. Sas-

katchewan. These errors have been submitted to proper authorities verbally and in written form on several occasions, both by Major Tweedy and Mr. L. S. Crosby, only to be met by the usual bureaucratic indifference.

The Stanley Mitchell Hut in Little Yoho Valley is now open for use, and facilitates ascents in the President Range and on adjacent peaks. The location and uses of the hut are described in *C. A. J.*, xxvii, 73.

President Range. The ascent direct from Emerald Lake is not mentioned in the Guidebook because of its great length, now superseded by better routes (Stanley Mitchell Hut), but it should be pointed out (*C. A. J.*, xxvii, 127) that in 1908 the ascent was made by C. Q. Bey, T. Kidd, A. A. McCoubrey, *G. Feuz.* Emerald Pass was reached via the deep valley at the N. W. end of the lake and the President ascended. It was traversed to President Pass and the Vice-President ascended, this in turn being traversed and Michael Peak crossed to near Yoho Pass, this last part presenting some difficulty.

President Pass. In the Guidebook, page 114, the elevation of 8899 ft. is incorrect and should be 9469 ft.

Mt. des Poilus. Guidebook, page 113, for *C. Kain* read *C. Klucker.*

Mt. Balfour. 1940, E. Cromwell, Miss G. Engelhard. Traverse from Twin Falls via Balfour Pass and N. ridge, with descent to Takakkaw camp by way of S. ridge and Daly Glacier. By trail from Twin Falls chalet to receding tongue of Yoho Glacier. Crossed three-quarters of a mile above snout and cut steps down to toe of glacier, then following N. W. margin of Waves Creek and crossing to S. bank by a snow bridge. Guides make use of a natural bridge, the location of which must be ascertained. Thence up the glacier to Balfour Pass and the long N. ridge of the objective peak. Rotten, slabby rock with traverses on the E. snow face, the final pitch being up a sharp snow ridge to a steep rock face which is ascended on its N. E. side to the summit. Ascent to Balfour Pass 5 h.; to summit 4.5 h.; total 9.5 h. Descent by usual route to Takakkaw camp 3 h.

Mt. Bosworth. The same party. Via S. E. face from motor road about 1 mile E. of Wapta camp. Up scree ledges and gullies; laborious but easy to bastion on E. ridge about 500 ft. below summit. Thence up steep cracks and rotten rock to summit (survey cairn). Ascent 3.5 h. The obvious route, presumably used by the survey, is via the shale ridge on the W. side, but at this time it was blocked by a snow cornice.

Unnamed (9200 ft.). Two miles S. of Mt. Balfour on W. edge of Daly Glacier. 1940 first ascent by E. Cromwell, Miss G. Engelhard. Ascend via gully to right of Takakkaw Falls and thence onto Daly Glacier (2 h.). Cross glacier and ascend via broken rock of S. ridge to broad summit. Ascent 6 h.; descent 3.5 h. Views of Yoho Peaks and Lake Louise group. Bugaboo Spire and Bobbie Burns group also visible.

Forbes-Lyell Group. In July, 1940, a forest fire unfortunately destroyed the bridge across the N. fork of the Saskatchewan and much of the trail leading from mile 53 on the motor road to Glacier Lake. The best route now is still the old one, following the trail on the E. side of Howse River and fording the latter at a point almost opposite the mouth of Glacier River to the trail on its N. bank.

Owing to the retreat of the Lyell and Mons Glaciers, the best approach to the group is along the N. side of Glacier River, from which the S.E. Lyell Glacier is attained. Mt. Forbes and Mons Peak may each be ascended without bivouac but require long days. After crossing the S.E. Lyell tongue one should keep W. of Mons Glacier, climbing up a stream bed and ravine, through timber to the bivouac point mentioned in Route 3 for Mt. Forbes. This brings one above the lower icefall the same route being continued past the upper icefall by ascending bush and scree slightly W. of the glacier.

Sullivan Peak. 1940 first ascent by C. Beattie, Miss H. Bosworth, Miss G. Tillinghast and others. From A. C. C. camp one mile below head of Glacier River. Route leads N. up a steep gully opposite camp, then N.E. from the head of the gully over snow patches and loose rock slopes to a narrow short summit arête. Rope not used.

Unnamed (10,700 ft.). One mile W. of Mt. Forbes. 1940 first ascent by R. Bosworth, D. M. Woods and one other. By the usual route up Mt. Forbes to within 100 ft. below the W. col, thence turning W. and cutting or kicking steps up the steep snow slopes. Ascent takes about 1 hour less than Mt. Forbes and requires some route finding in crossing crevasses and other obstacles high on the peak.

Mt. Murchison (S. E. Tower, 10,659 ft.). 1940 first ascent by H. S. Hall, Jr., *E. Feuz, Jr.* From camp used by Cromwell-Engelhard party (see Guidebook), by way of the glacier between the objective and the N. Tower. Ascent 5.5 h.; intervening saddle (10,050 ft.) to summit, 55 m.

Unnamed (10,283 ft.). N. buttress of Cataract Pass. Guidebook, page 162. 1940 first ascent by Miss L. Gest, Miss P. Pres-

cott, *C. Häsler.* From motor highway 6.3 miles S. of 1938 A. C. C. campsite. Cross Nigel Creek on logs at old road camp. Ascend through open timber and dry stream bed to timberline. Traverse sidehill and cross gully to far slope of objective. Proceed up grassy slopes and shale (4 h.) to succession of towers forming S. W. ridge. Traverse around first large tower by descending slightly to left, return to ridge and continue over several towers. Before the final tower, traverse around to the right and avoid an impossible looking cliff. Return to ridge by easy ledges and follow narrow slabby crest to summit. Descent by gully on S. face to basin between peak and S. peak (10,182 ft.), traversing above timber to regain route of ascent. Shorter route of descent would be straight down to Panther Falls, but crossing of stream there is uncertain. Ascent 7 h. 40 m.; descent 4.5 h.

Mt. Columbia. Ascent direct from Columbia Icefield chalet, via Athabaska Glacier and S. E. ridge. 1940, Miss J. Atkin, D. R. Crosby, P. Lagerström. Chalet to top of glacier 2 h. 45 m. Icefalls well bridged and ascended without rope; skis with skins used in last icefall. Skis to base of mountain, 4 h., the S. E. ridge being followed to the summit. It was necessary to kick steps, but neither axe nor crampons were required. Chalet to summit 9 h. 15 m.; total time 16 h.

Mt. Olympus. From Camp Parker crossed Nigel Pass with packtrain and on second day passed warden's cabin on Brazeau outlet stream, following Brazeau River to second creek coming in from N. Old trail on E. side of stream leads to high-level campground near lake at S. base of Mt. Olympus. Party consisting of W. R. Hainsworth, A. E. Post, J. M. Thorington, R. Wells, Jr., ascended to col (9500 ft.) immediately E. of Mt. Olympus at head of valley overlooking Isaac Creek. Post remained at this point while Hainsworth circled Mt. Olympus over steep scree and up difficult ledges on N. N. W. to summit, finding a survey cairn, probably erected during the work for the Jasper Park S. sheet. Unable to descend by same route, Hainsworth went down long easy N. W. scree slopes to Isaac Creek (the probable survey route), rounding the base of Mt. Olympus and recrossing the col to camp. Thorington and Wells made first ascent of slightly lower unnamed point (ca. 10,000 ft.) immediately E. Ascent from camp to col 5 h. Isaac Creek is the key to many of the peaks of this area, which are of writing-desk formation with long easy scree slopes descending into this valley. Poor visibility marred the view of the higher Brazeau summits, but the Brazeau tongues have receded considerably since Coleman's visit. The party then visited Brazeau Lake and regained the motor road by crossing Poboktan Pass. A new bridge spans the Brazeau stream a short distance below the lake's outlet, eliminating the ford.

Waterfall Peaks (9600 ft.). Poboktan-Jonas divide, S. W. of warden's cabin on Poboktan Creek. These sharp little peaks present a steep face on the E. but like the nearby Poboktan Peak have interminable scree slopes on their W. sides. In 1938 the Waterfall Peaks were climbed by Miss L. Gest, Miss P. Prescott, who found on the summit a record of a party led by *J. Weiss*. Cross the shallow Poboktan stream from the warden's cabin and follow the N. side of the waterfall stream to the small glacial basin at the base of the peaks. Thence via E. face to N. peak, traversing to the higher S. peak.

Unnamed (10,150 ft.). Ten or 12 miles N. E. of the Big Bend bridge (Columbia River), from which it is seen prominently; 5 miles E. of Canoe River, the highest in its group. 1940 first ascent by H. S. Hall, Jr., *E. Feuz, Jr.* A lumber road with bridge across Wood River leaves the main highway a half mile E. of the Columbia bridge. This road, although partially blocked by windfalls and washouts, can be walked for 15 miles. The climb is made from the junction of the first important creek (known locally as Harvey Creek) with the Canoe on its E. side about 9 miles along the lumber road at an elevation of 2200 ft. From old lumber camp at this point ascend through timber on N. side of Harvey Creek to treeline (7300 ft.; 5 h.), thence crossing ridge at 7700 ft. and down 500 ft. to small stream from glacier on S. face. This stream flows to Harvey Creek. Thence a long narrow crack (5-20 ft. wide and without difficulty) through cliffs otherwise forbidding for 1200 ft. Above this the slabs are not difficult but rope was used. Easy rock and scree from 9000 ft. to summit. Ascent 11 h.; descent to treeline 3.5 h. Mt. Clemenceau is visible about 25 miles E.

Rundle's Journal. In the Banff museum, attached to a photograph of R. T. Rundle, the Wesleyan missionary to the Indians, is a statement to the effect that he reached the vicinity of Banff in the summer 1841 and camped for five weeks at the base of Cascade Mtn. That this is incorrect is shown by his detailed Journal, a copy of which Rundle's daughter made for the late Mrs. Warren.

Rundle arrived at Edmonton in the autumn of 1840, and met Sir George Simpson near Battle River in July of the following year when the governor was on his journey around the world. Rundle went several times to Rocky Mountain House, and was up Bow River as far as the site of the Old Bow Fort on June 8th, 1842. It was not until June, 1847, however, that he proceeded above this point into the mountains. He reached the site of Banff on June 28th, 1847, but did not stop, continuing at once to Lake Minnewanka where the Indians were camping. He proceeded E. along the lake on June 30th, and carved his initials and the date on a tree on the following day. The party then left the mountains through the valley of Ghost River to Bow, Rundle going back

to the site of the old fort for some of his belongings which he had cached. He then returned to Rocky Mountain House and Edmonton.

This appears to have been Rundle's only visit to the Banff area, and Sir George Simpson had preceded him, probably entering by way of the Ghost River gap on his way to Simpson Pass, where his blaze was later found. A complete copy of Rundle's Journal has been made for the records of the American Alpine Club.

Whymper in Canada. It is not often remembered that the conqueror of the Matterhorn made a lecture tour in the United States in the autumn of 1900. On arrival in New York he learned from Cornelius Hanbury of the death of the latter's sister, Charlotte, in her seventy-first year. Whymper first met her in 1899, but they had corresponded for many years, the lady having visited Chamonix as early as 1856 and made minor ascents. Although she was by ten years Whymper's senior, he was attracted by her charm and energy, and gave her family name to a Canadian peak above Ice River when he was there in 1901.

In earlier editions of the Guidebook it was stated, based on an article by Whymper, that the ascent of The Mitre was made by all four of Whymper's guides. However, Klucker says in his autobiography that only Pollinger and he took part in this ascent.

Smythe, in his biography of Whymper (1940) says in regard to the 1904 ascent of Crowsnest Mtn., "it appears that he sent one of his assistants and two Swiss guides to reconnoitre the mountain and they, finding the ascent possible, climbed the mountain much to their employer's annoyance." The assistant was Tom Wilson and one of the guides was C. Kaufmann.

J. M. T.

Purcell Range of British Columbia

Bugaboo Group. Under the leadership of George MacGowan a party of the Seattle Mountaineers visited this area in July, 1940, ascending most of the important summits. They suggest that Crescent Spire is not higher than 8800 ft. and that Pigeon Spire is about 10,050 ft., being some 200 ft. lower than Bugaboo Spire. "In checking the drainage on the W. side of Howser Spire, it appeared that Dr. Thorington was correct in his assumption that the stream drains into Vowell Creek (toward Spillimacheen) and not into Howser Creek. No break in the ridge was visible that would allow the stream to turn S." It would seem, therefore, that Howser Spire is no exception to the general rule that the higher Purcell peaks rise E. of the E.-W. Kootenay watershed.

Alps

Anniversaries. Conditions abroad have naturally precluded any celebrations, but mountaineers throughout the world should recall

that 1940 was the bicentenary of the birth of the Genevese scientist de Saussure, who ascended Mont Blanc in 1787. 1941 is the bicentenary of the arrival of the first Englishmen at Chamonix, Richard Pococke and William Windham, whose names are commemorated on the "Englishmen's Stone" near the Montanvert hotel. Windham and his brother, when small boys, were given swimming lessons in the Thames by none other than Benjamin Franklin, as recorded in the latter's autobiography.

In the Eastern Alps, 1940 is the one hundredth anniversary of the first ascent of the Gross Venediger by von Ruthner.

American Members of the Alpine Club have revived the custom of dining together occasionally in New York, the toast "To British Victory" being proposed by Mr. William Williams at the Metropolitan Club on October 25th. They have also raised funds for an ambulance, which has been secured through British Ambulance Corps, Inc., of which Sir Claud Schuster is a patron. The machine will have marked on its doors "American Members of the Alpine Club in memory of Captain John Percy Farrar."

Andes

Chile. Late in 1939 the Italian climber and journalist, Piero Ghiglione, with two German companions, Messrs. Nobl and Jorgl, made a successful winter ascent, despite poor snow conditions and bad weather, of El Tronador, climbing both the high peak and the Argentine summit.

In April, 1939, M. and Mme. F. Marmillod made the first ascent of the Alto de los Leones.

In February, 1940, Prof. D. DeAgostini left for another trip to the Southern Andes of Patagonia to stay about three months.

Early in 1940 Arnold Heim of Zurich with Hermann Hess, Jr, from Engelberg and W. Schmitt of Osorno, Chile, were active in the Southern Andes of the Argentine-Chilean frontier. They were later joined by Dr. Hans Moser of Zürich. Their explorations in the vicinity of Lake Buenos Aires and the Leon Valley were considerably hampered by bad weather and sickness of a member of the party.

Colombia. Two Swiss climbers, G. Cuenet and Auguste Gansser, made the ascent of the Nevado de Huila.

Venezuela. In February, 1940, A. E. Gunther and K. W. Barr made an expedition into the Sierra de Merida and together made the ascent of Pico Bolivar by a route which appears to be followed regularly by many native climbers. On February 3rd Gunther made the first ascent, alone, of Pico Bonpland and the next day followed the Blumenthal route up the Hermanas Glacier to the S. Peak of Columna.

K. A. H.

Correspondence—The Cariboo Range

The Editor,
American Alpine Journal.
Dear Sir:

Believing it to be the policy of the American Alpine Journal to seek for accuracy in all matters concerning the mountains, I am enclosing a short article touching on the Cariboo Range, and trust that you will extend to me the courtesy of publishing it in your forthcoming issue.

Yours very truly,

Don Munday.

The account of R. T. Zillmer's enterprising trip to headwaters of North Thompson River (*American Alpine Journal,* 1940), unfortunately helps perpetuate a mistaken notion of the extent of explorations in the Cariboo Range by Canadian Pacific Railway surveyors; some of his geographic observations also invite comment.

Sir Sandford Fleming, referring to the Cariboo Range, said, "So far as known, every depression has been examined, and every indentation explored, without success" (in seeking for a practicable pass westward). (*C. P. R. Report,* 1877, p. 31.)

All climbing articles so far have ignored material plainly indexed in "The Royal Commission Report, 1882, Evidence." Roderick McClennan said the duties of one of his subordinates, Green, who was stationed at Cranberry Lake, were "to examine the country thoroughly around that region and explore both north and west, particularly with a view of finding a valley or pass through into the Cariboo country westward . . . they tried by several valleys for about twenty to twenty-five miles westerly. . ." McClennan was explaining his evidence with a map, so did not always name streams, but of what is now known as Raush River he said "They went up that stream some thirty miles. . . Having crossed the crest of the range they went down that river some distance." Evidently down Azure River. (*Royal Commission Report,* 1882, Evidence, pp. 1520-1533.)

In the light of this knowledge it becomes reasonable to conclude that E. W. Jarvis in 1874 sought a pass farther S. when "the lowest place that could be found on this route was an immense glacier 7,000 feet above sea level." Walter Moberly had already explored up Canoe River and for an unstated distance up the North Thompson. Moberly and Jarvis both would be in a position to know results of Green and Mahood's explorations from Castle River all along the range to Canoe River, so it is unlikely either Jarvis or Moberly gave any attention to the Thompson-Azure-Raush pass with its prohibitive gradients in the heads of all three valleys. As the Blue River Pass, only 3800 ft., was discarded, it would be senseless to add greatly to the mileage by using what

Zillmer praises as "an easily found, non-glacial, under-timberline pass," 5250 ft. high according to his figures, but 6100 ft. according to the *Canadian Geological Survey Report,* Part A, 1927, pp. 42-46, and 1929, pp. 274-296. Zillmer's map does not agree altogether with the map in the 1929 report.

It will thus be seen that the "controversy" which Zillmer imagined still existed as to the geography of this region had been settled authoritatively twelve years before his trip. His difficulties in interpreting references of myself and Allen Carpe to this area in various journals might have been less if he had refrained from giving our statements far more narrow meanings of his own, as, for instance, terming one headwater stream the North Thompson source on the strength of its size during summer melting of a glacier. As for there being a low pass between the Raush and North Thompson valleys, "In the mind of a great many people who are not particularly interested in mountain lore the term 'pass' merely applies to the summit of a pass, but this, of course, is a misconception." (R. W. Cautley in *C. A. J.,* 1921-22, p. 155.) Though indirect, the pass does exist.

Referring to the large snowfield which I described as existing between heads of Raush and North Thompson valleys, Zillmer argues "If there is such an icefield, it must be N. and E. of the divide ridge, for there is no such icefield in the basins of the Thompson or in the upper Raush. They may have in mind the large Braithwaite Icefield which is W. of the Azure."

Yet he refers specifically elsewhere to my illustration at p. 78, *C. A. J.,* 1928, which shows much of this snowfield—exactly where he concedes it must be "if it exists"—prominently in the middle distance, and in which may be identified by one of his illustrations the Braithwaite Icefield in the distance.

Some of his easy assumptions will not stand a moment's study. Referring to the same illustration of mine, he says it "includes this meadow [in the Azure-Raush Pass], although they assumed it was entirely in the Raush basin." Actually, Zillmer's own assumption, but he fails to explain how a meadow at 6100 ft. (5250 ft. is his figure) on the far side of mountains to which he gives a height of about 10,000 ft. could be photographed from 10,500 ft. on a mountain distant not less than six miles, rather obviously placing the meadow several thousand feet below the line of vision.

Zillmer's enthusiasm for the Cariboo Range may be readily understood by one who has been into it. He was, of course, some distance from the finer peaks. It was a bit unfortunate that his lack of up-to-date information led him to concentrate on an exploration of the passes instead of attaining some of the fine summits.

The foregoing was submitted to Mr. Zillmer, who has consented to the publication of his own comments, only in connection with the statement that he has no wish to be drawn into further argument, since he has only the highest regard for Mr. Munday's work. The editor feels that Mr. Zillmer's reply may also be added in the interests of accuracy, and begs to terminate the discussion therewith.

1. On p. 72, *A. A. J.*, I write, "Mr. Jarvis could not have been near the source of the Thompson River, for there is an easily found non-glacial, under-timberline pass near the source of the Thompson." The pass I refer to is not the Raush-Azure divide but the Summit Lake divide, which, of course, is S. of the Thompson or the Azure. Mr. Munday apparently thinks I refer to the Raush-Azure divide, so that his comments are not in point. Nor did I state, as Mr. Munday suggests, that Jarvis used the Azure-Raush pass.

2. Munday suggests that I term "one headwater stream the North Thompson source on the strength of its size during summer melting of a glacier." I have my article before me. I didn't compare the water of any of the sources of the North Thompson, for I was not in a place at any time where I could have made such a comparison. I am sure, however, that had Mr. Munday been with me, he, too, would have called the N.E. source the main stream, and for reasons having nothing to do with the amount of water.

3. Mr. Munday twice refers to the Raush-Azure divide meadow as 6100 ft. and not, as Zillmer says, 5250 ft. This elevation is not mine, for I was not in the meadow. It is taken from the *Annual Report of the Minister of Mines of British Columbia* (1938), which contains a map opposite p. 4, based on the geological survey reports referred to by Mr. Munday. The map gives the elevation as 5250 ft. I had sent for the geological reports, but no copies were available as the supply was exhausted.

4. On p. 74, *A. A. J.*, I write, "Carpe and Munday agreed that the sources of the Raush and Thompson were in a common, low pass. By this time, I had come to the conclusion that this probably was not the fact." I had reached this conclusion at this time because Ella Frye had shown me the 1938 mining report with its map, and also, because Miss Frye had shown me a blueprint sketched map made by her brother-in-law, a trapper and prospector familiar with the district. The map in the 1938 mining report, and I suppose this is true of the Geological Report, contains nothing showing the Thompson or any territory E. of the Raush-Azure meadow.

5. Mr. Munday refers to the controversy as having been "settled authoritatively twelve years before."

I had corresponded with the Bureau of Geology and Topography at Ottawa and with G. G. Aitken before taking the trip, and Mr. Aitken particularly went to considerable trouble giving me all material at his command. Portions of the report of the Minister of Mines for 1924 and 1927 were particularly helpful, because one of them contained Angus Horne's fine sketch map. But the material which I was able to obtain settled nothing. I also corresponded with Angus Horne, who is probably the best informed person on this region. I was partially satisfied then as to the Raush-Azure Pass but not as to the relationship of the Raush to the Thompson, although I had not been able to get, and do not now have the geological report for 1927-9, and had not then seen the 1938 mining report. The *Guidebook to the Interior Ranges* published in 1937 states that "further investigation will be required to determine exactly the source of the North Thompson River." G. G. Aitken, the Chief Geographer of British Columbia, should have known if anything had been authoritatively settled, but he wrote me under date of June 5th, 1939, just before I left for the Cariboos, as follows; after noting that he had already given me certain material, he wrote, "Apart from these, we have been unable to find any descriptive material or mapping of the large ice-field reported to be the common source of the North Thompson, Raush and Canoe Rivers. Should you be able to obtain any further mapping data of this apparently unsurveyed area, privately or by your projected reconnaissance this year, I would be grateful if you would furnish us with a copy for our records." If these matters were so well settled, why was it that Mr. Munday has so long remained silent on the correction of the errors in his own prior accounts?

6. Green's trip is entirely new to me, and Mr. Munday's construction of it hardly seems possible. How could Green, with horses, I presume, have crossed the Cariboos from Cranberry Lake base to the Raush and then from the Raush to the Azure? Is it possible that Green went up the North Thompson for 30 miles (it is 30 miles to where I went over Summit Pass) and over Summit to the Azure? This does not seem likely either, because Moberly, the next year did not deem the North Thompson worth ascending.

7. Mr. Munday says that Zillmer's map does not agree "altogether" with the map in the 1929 report. I should be very happy if my map were no more incorrect than is suggested by Mr. Munday. Personally I am satisfied that it will need considerable correction from future exploration, but I feel that it is not in good taste to suggest that a map is incorrect without pointing out in what respect it is incorrect.

8. Mr. Munday's remarks relative to the large icefield and to the low pass are so contentious as to deserve no comment. Mr. Munday located the large icefield, 30 to 40 square miles in area, as "on the glacial plateau between the converging upper reaches of

the Raush and the North Thompson Rivers." We, of course, walked in this region. It is not a plateau and it does not contain the large icefield.

9. In his second paragraph, Mr. Munday's controversial spirit gets so much the better of him that he suggests that *I* should have explained how *he* could have seen certain things from places I have never been to.

10. I am sorry for Mr. Munday that he wrote the last sentence of the note. He apparently does not know that during the first half of my Canadian vacation I am more interested in mountain exploration than in climbing and do only such climbing as is incidental to exploration; nor does he know that we did not have sufficient time or food to do more than we did. I could not have done any difficult climbing in 1939 for I injured my leg early on the trip and continued with great pain and at some risk; in fact, after the trip I did not spend my usual two weeks in the A. C. C. camp because I thought it too dangerous to climb with my injured leg which was not normal for months.

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